

2.3 Macroeconomic objectives – Low unemployment

Learning Outcomes

- Define the term unemployment.
- Explain how the unemployment rate is calculated.
- Explain the difficulties in measuring unemployment, including the existence of hidden unemployment, the existence of underemployment, and the fact that it is an average and therefore ignores regional, ethnic, age, and gender disparities.
- Calculate the unemployment rate from a set of data (HL).
- Discuss possible economic consequences of unemployment, including a loss of GDP, loss of tax revenue, increased cost of unemployment benefits, loss of income for individuals, and greater disparities in the distribution of income.
- Discuss possible personal and social consequences of unemployment, including increased crime rates, increased stress levels, increased indebtedness, homelessness, and family breakdown.

Subject vocabulary

unemployment occurs when there are people actively looking for work at the equilibrium wage rate but are not able to find work

labour force people who are working or who are actively seeking work

economically active describes people of working age who are employed or actively seeking employment

unemployment rate the percentage of people in the labour force who are unemployed

Define the term unemployment and explain how it is calculated

Low levels of **unemployment** is a key macroeconomic objective of most governments. Unemployment occurs when those who are actively seeking work are unable to find work. Therefore those who are not working are not necessarily counted as unemployed. People must be actively seeking work. For example housewives and househusbands, retired people, students, and those not legally allowed to work such as school children and prisoners are not working but are not looking for work and therefore are not counted as unemployed. People who are both not working and not actively seeking work are not part of the **labour force**. The labour force is made up of the employed and those actively seeking work and as such are described as being '**economically active**'.

The labour force participation rate is the percentage of the working-age population that is economically active. The meaning of working-age population varies from country to country because countries have different retirement ages and ages at which young people are legally allowed to leave school and look for full-time work.

The **unemployment rate** is calculated as a percentage using the following formulae.

$$\text{Unemployment rate (UR)} = \frac{\text{the total number of unemployed} \times 100}{\text{the labour force}}$$

Calculate the UR from data (HL)

A country has a labour force of 20 million people. This means that 20 million people are working or actively seeking work. The number of people unemployed is 4 million.

$$\text{UR} = \frac{4 \text{ million}}{20 \text{ million}} \times 100 = 0.2 \times 100 = 20\%$$

Calculate the size of the labour force when the unemployment rate is 15% and the number unemployed is 10 million.

$$15 = \frac{10}{\text{LF}} \times 100 \text{ simplify by multiplying both sides by LF}$$

$$15 \times \text{LF} = 1000 \text{ simplify by dividing both sides by 15}$$

$$\text{LF} = 1000/15 = 66.67$$

The labour force is 66.67 million.

Calculate the number unemployed when the UR rate is 5% and the labour force is 25 million.

$$5 = \frac{\text{unemployed}}{25 \text{ million}} \times 100 \text{ simplify by multiplying both sides by 25 million}$$

$$5 \times 25\text{m} = \text{unemployed} \times 100 \text{ simplify by dividing both sides by 100}$$

$$125 \text{ million}/100 = \text{the number of unemployed} = 1,250,000$$

Explain the difficulties associated with measuring unemployment

Government employment statistics are not always an accurate indicator of the true level of unemployment in an economy. Discussed below are the reasons for this.

The number of people working part-time in the UK has grown over the last few years. Many people who have taken on these part-time jobs did so because they were unable to find full-time jobs. Although they want to work longer hours and are underemployed they are not officially classified as unemployed because they are working. These people are not contributing as much as they would like to the output of the country.

Many people take jobs because they are unable to find the type of work that they are qualified to do. Some people who have been searching for work for a long period of time become very **frustrated** and eventually drop out of the labour force entirely because they believe they will never find suitable employment. As they are not actively looking for work they are not counted as unemployed and yet their potential contribution to economic growth is wasted. The type of unemployment discussed above is **hidden unemployment** and is not taken into account when calculating the UR. Therefore the UR is not necessarily a valid indicator of the true level of unemployment and the welfare of households. The UR underestimates the true level of unemployment.

A country's UR rate is calculated for the whole country. The rate however can vary dramatically across regions. Also the UR varies across different age groups. The UR rate of young adults in Spain in 2013, for example, is higher than the national average. Unemployment maybe higher amongst women, particularly when women find it hard to find full-time work and have to take part-time jobs. They are often underemployed. Some employers discriminate against particular ethnic groups. Therefore the unemployment rate of these groups is often higher than the national average. Also firms are reluctant to employ people if they do not speak the national language.

Model sentence: Distribution of unemployment is unequal due to geographical, age, ethnic, and gender **disparities**.

Discuss the costs of unemployment for the economy, society, and households

There are many costs to households, society, and the economy associated with unemployment. Unemployment is a waste of a scarce **resource**. Fewer goods and services are produced than is possible. Output is below the **full employment levels of output**. The higher the level of unemployment the bigger the **deflationary gap**. Aggregate demand is relatively low. Total expenditure in the economy is not sufficient to buy all the goods and services that could be made if all **factors of production** are fully utilized.

Discuss the private costs of unemployment

The costs borne by the people who are unemployed are called private costs. They suffer from low levels of income and have a lower **standard of living** than those employed. The amount of wants they can satisfy are limited by the **purchasing power** of their income. They suffer a fall in welfare.

In some countries the unemployed receive relatively generous unemployment benefit but in others no or very low benefit payments are provided by the government and therefore the unemployed struggle to satisfy their **basic needs**.

The children of those unemployed also are **adversely** affected. Statistically children of the long-term unemployed are less likely to enjoy a good standard of living in adulthood.

Cancer rates and obesity rates, for example, are higher amongst poorer members of the community. Mental health problems such as depression are also associated with low levels of income as is family breakdown.

Discuss the external costs of unemployment

Those who are unemployed for long periods of time become **deskilled** thereby reducing their chances of finding work. There is a connection between long-term unemployment and health problems. Those unemployed for long periods are statistically more likely to be involved in criminal activity such as theft and vandalism. Therefore there are costs associated with unemployment that must be borne by society. These are called **external costs**. They are the costs that are paid for by **third parties** such as the taxpayer. External costs include the cost to the taxpayer of police work associated with crime, the extra cost to the **judicial system** and the cost of keeping more people in prison. And there are the additional costs of medical treatment paid for by the taxpayer.

Subject vocabulary

hidden unemployment occurs when people have given up actively looking for work. They are not included in the official unemployment statistics despite being unemployed

resources the inputs into the production process, the factors of production

full employment level of output the potential quantity of output that can be produced in an economy when all factors of production are employed

deflationary (recessionary) gap the situation in which the actual output of an economy is less than its potential output

factors of production the inputs into the production process (land, labour, capital and entrepreneurship)

standard of living the level of well-being of a person or groups of people

purchasing power a measure of how many goods and services a given amount of money can buy

basic needs the elements required for survival such as water, food, and shelter

deskilled describes labour that has lost skills due to lack of use. Also production is deskilled when skilled labour is replaced by unskilled labour due to the introduction of new technologies.

external cost occurs when the production or consumption of a good creates a cost that must be paid by third parties

third parties people who are not directly involved in a transaction but are nevertheless affected by the transaction. People who are external to the market.

Synonyms

frustrated disturbed/ annoyed

disparities differences/ inequalities

adversely negatively

Glossary

judicial system relating to the law and the decisions that court judges make

Subject vocabulary

national income the sum of all income earned in a country in a given period of time

corporation tax a tax levied in the UK on company profits

government expenditure spending by a government in a specified period of time on such things as transport infrastructure, welfare payments, national defense, education, and health services which is financed by tax revenue and borrowing

budget deficit occurs when government expenditure is greater than tax revenue

national debt the total amount of money a government has borrowed. When a government runs a budget deficit it must borrow the difference thereby adding to the national debt

interest payments the money paid at regular intervals on loans

capital (goods) manufactured goods that are used in the production of other goods

net exports export revenue minus import expenditure

income inequality a measurement of the distribution of income showing the differences between the amount of income earned by different households in the economy

Discuss the effect on the government of unemployment

National income and expenditure is at a relatively low level therefore the government collects less tax revenue. Income tax revenues fall as unemployment rises and indirect tax revenue, revenue raised from the tax charged on the sale of goods and services, also falls. As expenditure falls profit earned by firms falls leading to a fall in revenue from **corporation tax**.

As unemployment rises total benefit payments made by the government to the unemployed increase. Also government pays for the external costs associated with unemployment. This represents a significant opportunity cost. As revenues fall and **government expenditure** increases the country's budget position worsens. A **budget deficit** is likely to occur. The government must borrow from the financial markets in order to fund the shortfall. This increases the size of the **national debt** leading to an increase in **interest payment** on the debt.

Discuss the effect on business investment and international competitiveness of unemployment

With low levels of expenditure and increasing unemployment firms do not feel confident about future economic prospects and are less likely to invest in new **capital** thereby reducing AD even further. This lack of expenditure and investment means that the country does not remain competitive as average costs of production rise above those of its international competitors. Demand for the country's exports falls leading to a fall in **net exports**, a component of AD. As the incomes of those who lose their jobs falls there is an increase in **income inequality**. The distribution of income becomes more unequal. (Distribution of income is discussed in detail on pages 164–67.)

Model sentence: There are both the private costs and the external costs (negative externalities) caused by unemployment. Tax revenues fall and government expenditure rises leading to a budget deficit and increases in the national debt.

Test your understanding of this unit by answering the following questions

- A country has a labour force of 15 million people. The number of people unemployed is 3 million. Calculate the unemployment rate.
- Explain the costs of unemployment to individuals, society, and the economy.
- Explain the limitations of the unemployment rate.

Learning Outcomes

- Describe, using examples, the meaning of frictional, structural, seasonal, and cyclical (demand-deficient) unemployment.
- Distinguish between the causes of frictional, structural, seasonal, and cyclical (demand-deficient) unemployment.
- Explain, using a diagram, that cyclical unemployment is caused by a fall in aggregate demand.
- Explain, using a diagram, that structural unemployment is caused by changes in the demand for particular labour skills, changes in the geographical location of industries, and labour market rigidities.
- Evaluate government policies to deal with the different types of unemployment.

Subject vocabulary

structural unemployment unemployment caused by a change in the type of labour firms demand. It is caused by a mismatch of the skills of those unemployed and the skills needed by firms.

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Explain the differences between, and causes of, the different types of unemployment

The two most important types of unemployment are **structural unemployment** and **cyclical unemployment**. Cyclical unemployment is also known as **demand-deficient unemployment** or **Keynesian unemployment**.

The demand for labour is a derived demand. Firms demand labour in order to produce output. Therefore the demand for labour is derived from the demand for goods and services. As aggregate demand increases firms respond by increasing output. In order to increase output firms employ more workers therefore unemployment falls. As aggregate demand falls firms respond by reducing output. Fewer workers are now required to produce fewer goods and services therefore unemployment rises. This is called cyclical unemployment.

because the numbers employed depends upon where the economy is in the **business cycle**. In a boom total expenditure (AD) is relatively high. Firms wish to produce more goods therefore unemployment falls. As AD falls the economy begins to slow down. Fewer workers are required and unemployment rises. This is why

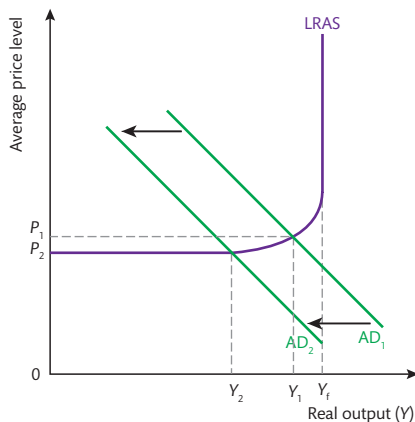


Figure 51.1

Structural unemployment is caused by changes in the structure of industries in a country. In the UK, for example, over the last few decades there have been major changes in the types of industries. Heavy industry, such as mining and ship building, has all but disappeared. **Manufacturing industries** in general now contribute significantly less to **GDP**. There has been a move away from heavy industry and manufacturing towards the **tertiary sector** or service sector. The skills needed by industries have changed. Some workers' skills do not match those now in demand. Workers are **occupationally immobile**. They cannot obtain work in the emerging industries because they do not have the required skills. The skills they do have are now not in demand and therefore workers are unable to gain employment.

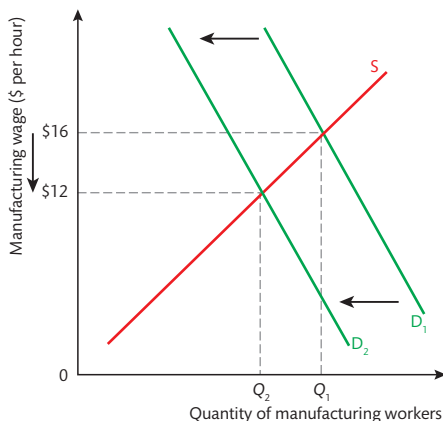


Figure 51.2

Structural unemployment occurs in developing countries as the economy moves away from producing agricultural output to producing manufactured goods. The demand for those with farming skills falls and the workers become unemployed. As economies grow they move away from reliance on the agricultural sector and structural unemployment increases. This also occurs when a country moves away from manufacturing to the service sector.

A flexible labour market is one in which workers are willing and able to respond to changes in the pattern of demand for labour and to changes in the wage rate. If workers are occupationally mobile it means they have skills that are demanded by industry. The greater the number of skills the more occupationally flexible the labour force is and the quicker it is able to adapt to structural changes thus reducing levels of structural unemployment.

Industries sometimes relocate, normally in order to reduce costs. Workers are often unable to move to where the industry has relocated. They are **geographically immobile**. This can be because of the high cost of moving from one region to another or simply because they do not want to move because of family and social ties. The cost of commuting to and from work may also act as a barrier to mobility. People in this situation find themselves unemployed because their skills are no longer demanded in the region they live and they are unwilling or unable to relocate. Geographical immobility leads to excess supply of certain types of labour in

this type of unemployment is called demand-deficient unemployment. It is caused by a lack of aggregate demand. This type of unemployment changes with the business cycle and so is temporary. As an economy moves out of **recession** cyclical unemployment falls as firms employ more workers in order to raise output.

As total expenditure falls the aggregate demand curve shifts down and to the left from AD_1 to AD_2 . In response firms reduce output from Y_1 to Y_2 . The **deflationary gap** increases from $Y_f - Y_1$ to $Y_f - Y_2$ and the **price level** falls from P_1 to P_2 . Total expenditure is not sufficient to buy all the goods and services that can be produced at the **full employment level of output**, Y_f . Workers become unemployed due to a lack of aggregate demand.

Subject vocabulary

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cyclical/demand-deficient unemployment/ Keynesian unemployment unemployment caused by a lack of aggregate demand. Unemployment changes as the economy goes through the business cycle, increasing when AD falls and decreasing when AD rises.

business cycle the fluctuations in economic activity over time. There are four stages of the business cycle: recession, trough, recovery, and peak/boom.

recession two consecutive quarters of negative economic growth

deflationary (recessionary) gap the situation in which the actual output of an economy is less than its potential output

price level the current weighted average price of a selected group of goods and services produced in a country over a period of time

full employment level of output the potential quantity of output that can be produced in an economy when all factors of production are employed

manufacturing industries industries that use labour and capital to turn raw materials and components into finished goods

GDP Gross Domestic Product is the monetary value of all the finished goods and services produced within a country in a given period of time, usually measured over a year

tertiary sector the part of the economy concerned with the provision of services

occupationally immobile occurs when workers do not have the necessary skills to change jobs

wage rate the amount of money paid to labour per unit of time or unit of output

excess supply occurs when quantity supplied is greater than quantity demanded

geographically immobile describes workers who are unable to relocate in order to find work, often because of the high costs of moving

Subject vocabulary

trade unions an association of employees whose aim is to negotiate with employers over pay and working condition using the collective power of the members of the trade union

minimum wage the minimum amount of money a firm is legally allowed to pay a worker for one hour's work

equilibrium wage the wage at which the quantity of labour supplied is equal to the quantity of labour demanded

forces of demand and supply changes in the determinants of demand and supply in a market that affect the market price and the allocation of resources

wage rigidity occurs when wages do not change as the demand or supply of labour changes

free labour market a labour market in which no intervention takes place, so the wage rate is determined solely by the demand and supply of labour

capital-intensive describes production that requires a large amount of capital relative to the amount of labour

labour-intensive describes production that requires a large amount of labour relative to the amount of capital

fiscal policy government policy designed to achieve macroeconomic objectives through government expenditure and taxation

monetary policy the control of the supply of money by the government to affect the economy (e.g. changing interest rates)

disposable income household income after direct taxation has been deducted

marginal propensity to consume is the proportion of additional income that an individual spends on goods and services. $MPC = \frac{\text{the change in consumption}}{\text{the change in income}}$.

one area and excess demand in others. The greater the degree of geographical flexibility the lower the level of unemployment.

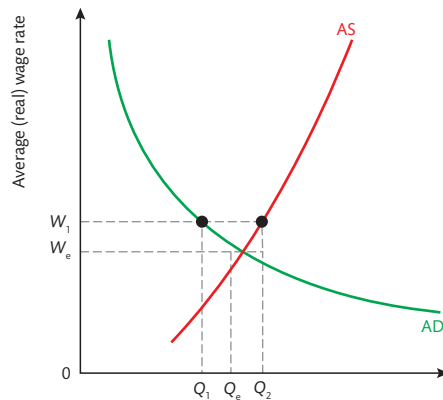


Figure 51.3

The equilibrium wage in a **free labour market** is W_e and equilibrium employment is Q_e as shown in Figure 51.3. The government introduce a minimum wage set at W_1 . At W_1 , the quantity supplied of labour, Q_2 , exceeds the quantity demanded, Q_1 . Wage in a free market would fall in order to eliminate the excess supply of labour. However, this cannot happen because of the minimum wage. Q_2 is the number of workers willing to supply labour at the minimum wage and Q_1 is the number of workers demanded. The minimum wage has caused unemployment of Q_2 to Q_1 . Inflexibility of the wage rate causes unemployment. This type of unemployment is called classical unemployment or real-wage unemployment caused by intervention that does not allow the market to clear.

The state of technology also changes over time. As capital becomes more technologically advanced it replaces the need for workers with certain skills. For example, in car manufacturing welding, the fusing of metal, was done by workers using welding machines. The use of automated welding equipment has left these workers without jobs. Unemployment caused by the introduction of such capital is called technological unemployment. The industry has become more **capital-intensive** and less **labour-intensive**.

Frictional unemployment is short-term unemployment caused by workers who have left one job to search for another. It is thought to be of benefit to an economy because workers are moving to jobs to which they are best suited and most productive. Workers often want to move to earn a higher wage and to develop careers. Frictional unemployment is a sign that this process is occurring. Seasonal unemployment occurs in industries when demand for labour changes depending on the time of year. When the weather is very wet, for example, less construction of buildings takes place and therefore demand for building workers falls. In the hospitality industry demand for hotel stays falls therefore demand for bar staff, waiters, and other hotel workers also falls causing unemployment.

Evaluate government policies to deal with the different types of unemployment

Demand-deficient unemployment

Demand-deficient unemployment is caused by low levels of aggregate demand therefore government could introduce policies with the aim of increasing aggregate demand. $AD = C + I + G + (X - M)$. The government through changes in policy, can try to affect the components of AD. Policies that are aimed at changing AD are called demand-side policies. There are two types of demand-side policies: **fiscal policy** and **monetary policy**.

Fiscal policy involves taxation and government expenditure. If the government reduces the tax on household income the total amount of **disposable income** in the economy rises. Households will spend a proportion of the extra income on domestically produced goods and services thereby increasing AD.

Model sentence: The actual increase in AD depends on households' aggregate **marginal propensity to consume**. The higher the MPC the greater the increase in consumption and therefore the greater the fall in demand deficient unemployment. (See pages 134–37 for a detailed explanation of marginal propensity.)

If households save or spend most of the extra income on imports **marginal propensity to withdraw** would be relatively high and the increase in consumption on domestically produced goods will be less. If a country has a relatively high MPW then the increase in disposable income will have less impact on AD.

Model sentence: An increase in consumption increases AD and firms respond by employing more workers in order to increase output leading to a fall in demand-deficient unemployment.

If households expect the economy to grow in the future and think that their jobs are secure then the MPC will be relatively high leading to a greater fall in unemployment. If households are less **optimistic** then they are more likely to save the extra disposable income or pay back existing debt. Therefore the increase in consumption will not be as great and the effect of the fiscal policy on unemployment will not be as big. Increases in AD cause induced investment. Firms increase investment in order to increase output in response to higher levels of consumption. Investment is a component of AD therefore AD rises even further as firms invest.

The government could reduce the rate of **corporation tax** leaving firms with higher after-tax profit. *Ceteris paribus*, investment rises leading to an increase in AD. Investment is an injection into the circular flow of income model and is subject to the **Keynesian multiplier** (see pages 134–37). Higher levels of investment causes further increases in income and expenditure. Therefore AD increases by more than the initial investment leading to a greater fall in unemployment.

The government could reduce indirect taxes such as VAT and **duty** charged on the sale of goods and services. A reduction in indirect tax in effect reduces the costs of production causing the SRAS curve to shift down and to the right. The price level falls leading to an increase in **quantity demanded**. A fall in the price level increases households' **real income** therefore consumption rises and unemployment falls.

The government could increase government expenditure. It could invest in **transport infrastructure** for example. Government expenditure is a component of AD and an injection into the circular flow of income model. Like private investment by firms, government expenditure is subject to the multiplier causing increases in income and expenditure greater than that caused by the initial expenditure.

However, **expansionary fiscal policy** can lead to a worsening budget deficit (occurs when government expenditure > tax revenue) because tax revenue falls at the same time as government expenditure increases. The government must borrow more money from the financial sector leading to increases in the national debt. The debt and the interest charged on the debt must be repaid by the taxpayers in the future, thereby reducing the future taxpayers' disposable income and their levels of consumption.

The government could introduce an expansionary monetary policy by reducing the **interest rate**. As the cost of borrowing falls households are more likely to borrow money from banks in order to buy relatively more expensive goods, such as cars, leading to an increase in household consumption. The interest payment on existing loans also falls thereby increasing households' **discretionary incomes** leaving people with more money to spend on goods and services. AD rises and unemployment falls. Again, confidence about the future of the economy has a major effect on the amount of the extra income that households spend rather than save.

As interest rate falls, *ceteris paribus*, firms are more likely to borrow in order to invest because it reduces the cost of an **investment** and thereby increases potential returns. However, demand for **loanable funds** is not very sensitive to changes in interest. Far more important are the expectations firms have regarding future levels of AD. If firms are not optimistic about future levels of aggregate demand lower interest rates are unlikely to encourage them to borrow in order to invest.

Model sentence: Fiscal policy and monetary policy are called demand-side policies because their purpose is to change the components of aggregate demand.

Structural unemployment

Structural changes in the economy lead to **occupational immobility**. Demand for certain skills falls leading to a rise in unemployment. These workers are willing to work but do not possess the skills that industries now demand. Increasing AD will not affect this type of unemployment. The government could introduce policies that lead to an increase in the supply of labour that possess the skills that are in demand. Such policies are **supply-side policies** because the aim is to affect a factor of production that is used in order to supply goods and services.

Government can increase **occupational flexibility** through education and training. A good education in schools should give young people the necessary skills to be able to adapt to the demands of industry, enabling them to be able to learn new skills later in life. Post-16 and -18 colleges could offer courses that give students the necessary skills so that they can find jobs. In this way government directly intervenes by providing the training

Subject vocabulary

marginal propensity to withdraw is the proportion of additional household income that is taxed, saved and spent on imports. $MPW = MPT + MPS + MPM$

corporation tax a tax levied in the UK on company profits

Keynesian multiplier the number by which the value of the expenditure is multiplied to give the total increase in national income. The multiplier = $1/1-MPC$

quantity demanded the amount of a good consumers are willing and able to buy at a given price over a given period of time

real income income after taking into account the effects of inflation on purchasing power

transport infrastructure the physical capital that supports a transport system

expansionary fiscal policy policy involving the increase of government spending and/or the reduction of taxation

interest rate the percentage amount charged by a lender for money borrowed

discretionary income income after tax and expenditure on basic necessities such as rent, heating, and food

investment the addition to capital stock

loanable funds sum of money in an economy that is saved and available to those wishing to borrow

structural change long-term shift in the fundamental industrial structure

occupational immobility occurs when workers do not have the necessary skills to change jobs

supply-side policies government policy designed to affect the level of aggregate supply in an economy by increasing the quantity and/or productivity of the factors of production

occupational flexibility describes a situation in which workers are able to perform a variety of tasks because they have the necessary skills

Synonyms

optimistic..... positive

duty..... tax

Subject vocabulary

market failure when resources are not allocated or used efficiently

tax revenue the income the government receives through the levying and collection of taxes

opportunity cost the next best alternative forgone

transport infrastructure the physical capital that supports a transport system such as roads, railways, ports, airports

private costs the cost incurred by firms or consumers from their own production or consumption of a good

resources the inputs into the production process, the factors of production

geographically immobile describes workers who are unable to relocate in order to find work, often because of the high costs of moving

tax rate the percentage at which an individual's income or expenditure and a firm's profit and expenditure is taxed

structural unemployment unemployment caused by a change in the type of labour firms demand. It is caused by a mismatch of the skills of those unemployed and the skills needed by firms.

corporation tax a tax levied in the UK on company profits

excess supply occurs when quantity supplied is greater than quantity demanded

standard of living the level of well-being of a person or groups of people

distribution of income how a country's total GDP is shared amongst its population

labour force people who are working or who are actively seeking work

hidden economy part of the economy where illegal and untaxed trade occurs?

full employment level of output the potential quantity of output that can be produced in an economy when all factors of production are employed

economic growth an increase in real GDP

Glossary

apprenticeships the process of learning a trade by working for an employer

needed to correct **market failure** caused by occupational immobility. This type of training is funded by **tax revenue**. There is a large **opportunity cost** of direct provision meaning that there will be less investment in other areas such as **transport infrastructure** and health services. The government can encourage private firms to offer training and **apprenticeships** through the provision of subsidies. A subsidy reduces the **private cost** of providing training and apprenticeships thereby increasing their supply. Again there is an opportunity cost of this policy. The firms might use the subsidy for purposes other than training and therefore not always provide sufficient training. The government must use scarce **resources** in order to make sure that training takes place.

The government can reduce the cost of moving from one area to another in order to reduce **geographical immobility**. For example, governments can provide relatively cheap social housing in areas where rents are relatively high or reduce households' **tax rates**. Increasing investment in transport infrastructure will reduce commuting times thereby making it possible for people to get to and from work efficiently without having to move house. The government could encourage firms to relocate to areas of high **structural unemployment** by, for example, reducing local business taxes and **corporation tax**.

Introduction of all these policies involves large opportunity costs. Less tax revenue is available for alternative investments. The policies are effective only in the long term. The supply of labour with the skills demanded by industry increases slowly over time. If the policies are to be effective government must also have accurate information about the type of skills not only needed now but those that will be needed by industry in the future.

Real wage/classical unemployment

Policies introduced to reduce the power of trade unions to negotiate with management a higher wage rate will reduce classical unemployment. The removal of the guaranteed minimum wage removes a barrier to wage flexibility. Such policies allow the wage rate to be flexible so that it can change in response to market forces. When there is **excess supply** of labour at the wage rate the wage then can fall until quantity of labour demanded and the quantity of labour supplied are equal and the market clears thereby curing classical unemployment.

The removal of the minimum wage would reduce the **standard of living** of low-paid workers making the **distribution of income** more unequal. The workers might be better off claiming unemployment benefits so they will leave the **labour force** entirely and perhaps start working in the **hidden economy**. This would reduce the **full employment level of output**.

Frictional unemployment

If the government reduced unemployment benefit it would act as an incentive for those between jobs to seek and take jobs more quickly. Government could improve the lines of communication between firms who demand labour and people who want to supply their labour by providing information about job vacancies through work agencies. School leavers and graduates who are looking for work are included in frictional unemployment statistics. Schools and universities could be instructed by government to provide career advice and information about job vacancies.

What is the natural rate of unemployment?

There is always some unemployment in a country even when the economy is producing at full employment levels of output. There will always be some people who are between jobs, those who are unemployed because demand for labour in some industries changes throughout the year or who are occupationally immobile. It is expected and even beneficial to the economy that workers will change jobs and that school leavers and graduates take time to find work. It is assumed that certain workers will be unemployed at certain times of the year due to a fall in demand for the output of certain industries. A developing and growing economy will go through structural changes so occupational immobility is a natural consequence of these changes and some occupational unemployment is in some ways a good thing because it is an inevitable result of **economic growth**.

Model sentence: Natural unemployment is the sum of frictional, seasonal, and structural unemployment. This sum expressed as a percentage of the labour force is the natural rate of unemployment.

Test your understanding of this unit by answering the following questions

- Distinguish between demand-deficient unemployment and structural unemployment.
- Discuss government policies to deal with demand-deficient unemployment.
- Discuss government policies to deal with structural unemployment.
- Explain the term 'the natural rate of unemployment'.

Learning Outcomes

- Distinguish between inflation, disinflation, and deflation.
- Explain that inflation and deflation are typically measured by calculating a consumer price index (CPI), which measures the change in prices of a basket of goods and services consumed by the average household.
- Construct a weighted price index, using a set of data provided. (HL)
- Calculate the inflation rate from a set of data. (HL)
- Explain that different income earners may experience a different rate of inflation when their pattern of consumption is not accurately reflected by the CPI.
- Explain that inflation figures may not accurately reflect changes in consumption patterns and the quality of the products purchased.
- Explain that economists measure a core/underlying rate of inflation to eliminate the effect of sudden swings in the prices of food and oil, for example.
- Explain that a producer price index measuring changes in the prices of factors of production may be useful in predicting future inflation.

Explain the difference between inflation, disinflation, and deflation

Low and stable levels of inflation is a macroeconomic policy objective of government. Inflation is defined as a continuing or **sustained** increase in the average price level of goods and services in an economy over a given period of time. Deflation is a continuing fall in the average price level over a given period of time. A single increase or decrease in the price of a particular good is not inflation or deflation. During a year, the price of some goods and services increase while the price of others decrease. For example, the price of energy may increase and the price of clothes may decrease. Inflation or deflation is an increase or decrease in the *average* price level of goods and services. The rate of inflation is the rate at which prices increase over time. Disinflation is a fall in the rate of inflation. In other words, the average price level continues to increase but at a diminishing rate. Creeping inflation occurs when there is a relatively small increase in the average price level each year. Hyper-inflation occurs when there are sustained, very large increases in the average price level.

Model sentence: Inflation is a sustained increase in the average price level, deflation is a fall in the average price level, and disinflation is a fall in the rate of inflation.

Explain how inflation is measured

Inflation is a sustained increase in the average price level of goods and services. An index is used to measure the price level. If at the beginning of the year the **price index** was 100 and by the end of the year it rose to 104 this means that the rate of inflation was 4%. The consumer price index (CPI) is used by many governments to measure the changes in the price level of consumer goods and services. Prices of a large selection of goods and services (called the 'basket' of goods) are monitored by the government each month. Goods and services in this 'basket' include food and drinks, gas and electricity, rent, car insurance, clothes, electrical goods, mobile phones, petrol, train and bus fares, along with many others. Prices of some goods in the basket increase and some fall but when the price of the basket of goods shows an overall increase it means that there has been an increase in the average price level. Prices are taken from a number of suppliers and **retailers** across different regions of a country and an average of the change in price of each good is calculated and then **converted** into a price index.

The contents of the basket of goods changes over time. For example, a change in technology leads to changes in the consumption of goods. Now many people buy laptop computers and buy music by downloading it. These items are now included in the basket of goods. The goods selected to be in the basket changes with patterns of consumer consumption so that it is representative of the goods consumed by the average household. This means that the calculated inflation rate is one that is experienced by the average household.

Model sentence: When calculating the rate of inflation the **base period** is a specific point in time that is chosen by the government in order to be able to measure changes in the price of a basket of goods from the chosen point in time to a later point in time.

Synonyms

sustained continued/
maintained

converted changed

Subject vocabulary

price index an index that follows the relative changes in the weighted average price of a 'basket' of goods over a period of time

retailers businesses that sell final goods to consumers as opposed to businesses that sell goods to producers

base period a period of time, often a year, during which data is collected and then used as a benchmark against which data from other periods of time is measured thereby allowing comparison of data over time

Calculate the CPI – a step-by-step guide

Trouble shooter

The government wanted to calculate the change in prices between 1 January and 31 December.

The base period index is calculated using the following formula:

$$\text{The consumer price index} = \frac{\text{the price of the basket of goods on 1 January}}{\text{the price of the basket of goods on 1 January}} \times 100$$

The price of the basket of goods on 1 January divided by itself equals 1 and then multiplied by 100 = 100. The consumer price index for the base period of time is always 100.

The consumer price index for 31 December is calculated by using the formula:

$$\text{CPI on 31 December} = \frac{\text{the price of the basket of goods on 31 December}}{\text{the price of the basket of goods on 1 January}} \times 100$$

The sum of the prices of the goods in the basket on 1 January was \$20,000.

The sum of the prices of the goods in the basket on 31 December was \$20,500.

$$\text{CPI on 31 December} = \frac{\$20,500}{\$20,000} \times 100$$

CPI = $1.025 \times 100 = 102.5$. The rate of inflation is 2.5%.

If an average household spent \$10,000 on goods and services at the beginning of the year, it would have to pay \$10,250 for the same goods and services at the end of the year.

Subject vocabulary

purchasing power a measure of how many goods and services a given amount of money can buy

disposable income household income after direct taxation has been deducted

This method of calculating the rate of inflation is oversimplified and not very useful because it does not take into account the proportion of income spent by the average household on each type of good. Each good is assumed to be equally as important. But the **purchasing power** of an average household's income is affected more by changes in the price of petrol and rents than it is by changes in the price of a box of matches and the price of chocolate.

Construct a weighted price index, using a set of data provided, and calculate the rate of inflation (HL)

An average household spends a higher proportion of its **disposable income** on some goods than it does on others. For example, the average household might spend 30.8% of its disposable income on housing, 16.2% on food and non-alcoholic drinks, 15.5% on transport, and 13.5% on recreation and leisure, spending a much lower proportion on tobacco, alcohol, and education.

Model sentence: The government puts the goods and services included in the basket of goods into categories and calculates the proportion of the average household's income that it spends on each category.

Using this data the government gives a weight to each category. For example, the category of food and non-alcoholic drinks includes lots of items such as bread, butter, beef, potatoes, peas, milk, tea, coffee, as well as ready-prepared meals. The transport category includes petrol, new cars, bus fares, train fares, car insurance, and so on. The weight each category is given is a reflection of the proportion of income that the average household spends on the goods and services in each category. The sum of the weights given to each category equals 100. Shown in Table 52.1 is an example of the weighted categories for a country.

Also shown is the change in price in each category. The price of the goods and services included in the housing category has increased by an average of 5%. To calculate a 5% increase in the proportion of income spent on housing multiply 30.8 by 1.05: $30.8 \times 1.05 = 32.34$. The average price of goods in the health category has increased by an average of 10%. To calculate the 10% increase in the proportion of income spent on health, multiply 2.1 by 1.1: $2.1 \times 1.1 = 2.31$. The same is done for all categories and appear in the final column and are added to give the total.

Category	Weight/%age of income spent on each category Base time period	Change in price in each category after 1 year	New time period CPI time period 2
Housing	30.8	1.05	32.34
Food and non-alcoholic drinks	16.2	1.02	16.524
Transport	15.5	1.1	17.05
Recreation and leisure	13.5	1.02	13.77
Clothing	6.4	1.05	6.72
Furniture and household goods	5.6	1	5.6
Alcohol and tobacco	3.3	1.03	3.465
Communication	3.7	1.01	3.737
Education	2.9	1.04	3.016
Health	2.1	1.1	2.31
Total	100 (CPI Base index)		104.532 (CPI)

Table 52.1

The consumer price index can be used to calculate the rate of inflation (IR) between two periods of time by using the following formula:

$$IR = \frac{\text{CPI time period 2} - \text{CPI base index}}{\text{CPI time period 1}} \times 100$$

$$\text{Using the example in Table 52.1, } IR = \frac{(104.532 - 100)}{100} = 0.04532 \times 100 = 4.532\%$$

If the CPI increases from 104.532 to 106.6 in the following year, the inflation rate over the two-year period is calculated in the following way:

$$IR = \frac{\text{CPI time period 3} - \text{CPI time period 1}}{\text{CPI time period 1}} \times 100 = \frac{(106.6 - 100)}{100} = 0.066 \times 100 = 6.6\%$$

The rate of inflation between period 2 and 3 is calculated in the following way:

$$IR = \frac{\text{CPI time period 3} - \text{CPI time period 2}}{\text{CPI time period 2}} \times 100 = \frac{(106.6 - 104.532)}{104.532} = 0.0978 \times 100 = 1.98\%$$

In Table 52.1, housing prices increased by 5% while the price of clothing did not change. In Table 52.2, the price of housing remains unchanged while the price of clothing increases by 5%. The calculations are done as before and are shown in the table.

Category	Weight/%age of income spent on each category Base time period	Change in price in each category after 1 year	New time period CPI time period 2
Housing	30.8	1	30.8
Food and non-alcoholic drinks	16.2	1.02	16.524
Transport	15.5	1.1	17.05
Recreation and leisure	13.5	1.02	13.77
Clothing	6.4	1.05	6.72
Furniture and household goods	5.6	1	5.6
Alcohol and tobacco	3.3	1.03	3.465
Communication	3.7	1.01	3.737
Education	2.9	1.04	3.016
Health	2.1	1.1	2.31
Total	100		102.992

Table 52.2

$$\text{The index has risen from 100 to 102.992: } IR = \frac{102.992 - 100}{100} = 2.992\%$$

A percentage change in the price of housing has a greater effect on the overall rate of inflation than the same percentage change in the price of clothing.

The rate of inflation over the year was just under 3%, compared with over 4% in the previous example. This highlights the importance of weighting the various categories. The rate of inflation is affected more by changes in the price of goods that the average consumer spends a relatively higher proportion of their income on and is affected least by changes in the price of goods that the average consumer spends a relatively lower proportion of their income on.

Model sentence: The proportion of income spent by each household on the categories of goods is different, therefore each household has a different rate of inflation.

Explain the limitations of the consumer price index as a measure of inflation

The CPI measures changes in the average price of goods and services that are bought by a typical household over a given period of time. The idea is that the rate of inflation should give a true reflection of how price changes affect most people living in a country. Households buy different baskets of goods and in varying proportions. A household on low income spends a higher than average proportion of its **disposable income** on food, rent, and other necessities, and a much lower than average proportion of income on luxuries such as holidays abroad than a household earning relatively high income. Therefore, when the price of necessities increases, it has a much greater impact on the **standard of living** of those on low incomes than it does on households earning a much higher income. The inflation rate for the low income household in this example is higher than the CPI average rate of inflation because very low income earners spend nearly all their income on necessities.

Price increases are sometimes caused by advances in technology and these are not taken into account when calculating the rate of inflation. The quality and efficiency of washing machines and computers for example has improved a lot over the years and these advances can lead to an increase in price but the new goods are in some ways not comparable with the older, less technologically advanced goods.

Patterns of consumption can change relatively quickly and the government must change the basket of goods so that it represents the purchasing habits of the average household. It takes a relatively long period of time to make the necessary changes to the basket of goods; therefore, at any one time the goods in the basket are not an accurate representation of the quantity and types of goods currently consumed. Therefore, the average rate of inflation is inaccurate.

Inflation is defined as a sustained increase in prices. However, the statistics gathered by the government do not take into account short-term changes in price caused by changes in supply-side factors. Food prices can rise steeply at certain times of the year due to shortages but can fall again quite quickly once supply rises. Petrol price increases can also change quickly due to supply-side factors but over the long term the trend in price increases is more stable. Such increases in price can give a misleading inflation rate. Governments try to take into account the effects of these changes in price by calculating a 'core' inflation rate by excluding the goods from the basket of goods.

CPI measures changes in the price of **consumer goods**. The price of **factors of production** is not taken into account. A **producer price index** (PPI) measures a basket of goods made up of **raw materials**, **capital**, and energy. PPI is a useful measure because it shows what is happening to **costs of production** and therefore can be used to predict what will happen to the price of consumer goods in the future. If costs of production increase, firms increase prices of the goods they produce in order to maintain their **profit margins**. Inflation caused by increases in the price of factors of production is called **cost-push inflation**.

Errors occur in the collection of the data affecting the accuracy of the calculated rate of inflation. Also only a small percentage of retailers and suppliers are used to collect the data on price changes. The government could extend the number of retailers and suppliers and increase the number of areas of the country where data is collected, but this increases the **resources** needed and adds to the costs of data collection.

The basket of goods and the ways data is collected varies across countries. This makes international comparisons of rates of inflation both difficult and misleading.

Test your understanding of this unit by answering the following questions

- Distinguish between inflation, disinflation, and deflation.
- Explain the term 'the basket of goods'.
- What are the limitations of CPI as a measure of inflation?
- What is the producer price index?
- Explain why individual households experience different rates of inflation.
- Answer the questions below by using the information in the table (HL).

Subject vocabulary

disposable income

household income after direct taxation has been deducted

standard of living the level of well-being of a person or groups of people

consumer goods goods that are ultimately consumed by households rather than goods used by firms in the production of another good

factors of production the inputs into the production process (land, labour, capital and entrepreneurship)

producer price index a relative measure of a change in the average price of a selection of goods and services sold by producers to other businesses, including the average price of finished goods, components, and raw materials

raw material the basic material from which a good is made

capital manufactured goods that are used in the production of other goods

costs of production the amount the firm pays for the factors of production used to produce goods or services

profit margin the percentage of producer revenue that ends up as profit for the firm. Profit margin = profit/producer revenue × 100. If a firm earns a profit of \$20m from sales of \$80m its profit margin is 25%.

cost-push inflation inflation caused by an increase in the costs of production, resulting in a decrease in aggregate supply

resources the inputs into the production process, the factors of production

CPI date for country 1; Q3 = third quarter (i.e. July–September); Q4 = fourth quarter (i.e. October–December) etc.

	Q3 2008	Q4 2008	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010
Country 1's CPI	108.4	107.9	107.7	108.3	108.5	108.6	109.1

- Calculate Country 1's inflation rates between each of the seven quarters.
- Between which quarters was the inflation rate highest? Lowest?
- Between which quarters did Country 1 experience disinflation?
- Between which quarters did Country 1 experience deflation?

Learning Outcomes

- Discuss the possible consequences of a high inflation rate, including greater uncertainty, redistributive effects, less saving, and the damage to export competitiveness.
- Discuss the possible consequences of deflation, including high levels of cyclical unemployment and bankruptcies.
- Explain, using a diagram, that demand-pull inflation is caused by changes in the determinants of aggregate demand (AD), resulting in an increase in AD.
- Explain, using a diagram, that cost-push inflation is caused by an increase in the costs of factors of production, resulting in a decrease in short-run aggregate supply (SRAS).
- Evaluate government policies to deal with the different types of inflation.

Explain the effect inflation has on the purchasing power of money

Inflation causes **real incomes** to fall. This occurs when the rate of inflation is greater than the rate at which income grows. Changes in real income are calculated by subtracting the percentage change in **nominal income** from the rate of inflation. If the rate of inflation is 5% and nominal income increases by 2%, then real income falls by 3%. Inflation causes the **purchasing power** of money to fall. The amount of goods and services that can be bought with a set nominal income falls. Consumers cannot satisfy as many wants with their income, therefore **consumer welfare** falls.

Model sentence: If the percentage increase in nominal income is equal to the rate of inflation, then real income stays the same, leaving the purchasing power of income unchanged.

Explain the effect of inflation on the incentive to save

Some households save a proportion of their **disposable income** in a **savings account** at a bank. In return for the use of the money the bank pays the saver **interest** on the amount of money saved. For example a saver puts \$10,000 in the bank at an **interest rate** of 5% per annum (each year). The interest paid to the saver is 5% of \$10,000 which equals \$500. At the end of the year, the saver has \$10,500 in the bank (less any tax that must be paid on the interest earned). The purchasing power of the savings has increased. However, if the rate of inflation is greater than the rate of interest then the purchasing power of the saved money falls. If inflation is 6% and the **nominal rate of interest** is 5%, the **real value of the money** saved falls by 1%. Fewer goods and services can be bought with the savings than could have been bought at the start of the year. If inflation is 3% and the nominal rate of interest is 5% then the real value of the savings increases not by 5%, the nominal rate of interest, but by only 2%. Therefore, in order to calculate the increase in the real value of the savings, inflation must be taken into account.

Model sentence: The real interest rate takes into account the effects of inflation on the purchasing power of the saved money. The real rate of interest = the nominal rate of interest – the rate of inflation.

It is important to say that the formulae used above are simplified versions of the formulae actually used by economists when working out real income and the real interest rate for government and other institutions.

When the rate of inflation is greater than the nominal rate of interest, the real rate of interest is negative. The savings could buy more goods at the start of the year than at the end. Households bring forward consumption

Subject vocabulary

real income income after taking into account the effects of inflation on purchasing power

nominal income the numerical value of income which has not been adjusted to take into account the effect inflation has on the purchasing power of income

purchasing power a measure of how many goods and services a given amount of money can buy

consumer welfare a measure of the benefit obtained from the consumption of goods

disposable income household income after direct taxation has been deducted

savings account a bank account, which pays interest on deposits.

interest the price paid for the use of borrowed money/ the money earned from bank deposits

interest rate the percentage amount charged by a lender for money borrowed

nominal rate of interest the rate which has not been adjusted to take into account the effect of inflation

real value of money obtained by removing the effect of inflation on the nominal value of money

Subject vocabulary

returns on investment

expressed as a percentage it is calculated using the formula: $\text{return on investment} = (\text{gain from investment} - \text{cost of investment}) / \text{cost of investment} \times 100$. It is used by firms to evaluate the effectiveness of an investment project and to compare the potential returns from investment options.

asset an item of value owned by an individual or firm, especially one that could be converted to cash

equilibrium price the price at which the quantity consumers are willing and able to buy is equal to the quantity firms are willing and able to produce

nominal rate of return the amount of money earned on money invested, expressed as a percentage of the sum invested, not adjusted for inflation

positive real return when the return on investment is positive after it has been adjusted to take into account the effect inflation has on its value

long-run economic growth an increase in the productive capacity of a country

productivity the quantity of output per unit of input

full-employment level of output the potential quantity of output that can be produced in an economy when all factors of production are employed

circular flow of income an economic model that shows the flow of money between households and firms and, in more complex versions, the flows of money into and out of the financial sector, government sector, and the international sector

cyclical unemployment unemployment caused by a lack of aggregate demand. Unemployment changes as the economy goes through the business cycle, increasing when AD falls and decreasing when AD rises.

current account deficit occurs when the amount of money flowing out of a country from the trade in goods and services, investment income, and transfers is greater than the amount flowing in

when high levels of inflation are expected because the money spent now can buy more goods and services than in the future. Inflation encourages consumption now and discourages saving. This could lead to a fall in the supply of loanable funds available for firms to borrow and therefore to a fall in investment. Investment is needed for the economy to grow.

When the real interest rate is low, households try to find ways of earning higher **returns on investment**. So instead of putting income into a savings account, a household might buy **assets**, such as gold, property, shares, and art instead. When real interest rates are low, often the price of gold increases. This is because demand for gold increases as households try to increase their returns on savings thereby pushing up the **equilibrium price** of gold.

Model sentence: *Ceteris paribus*, the higher the rate of inflation, the lower the real rate of interest. High inflation encourages households to bring consumption forward and low real rates of interest reduce households' incentive to save.

Explain the redistributive effects of inflation

Inflation causes the real interest rate to fall causing a transfer of resources away from savers to borrowers. For savers, inflation leads to a fall in the real value of their savings but for borrowers, inflation reduces the real value of their debt. Inflation is bad for savers but benefits borrowers.

There are many people who live on a fixed income, such as income from a private pension or from a savings account. Many incomes from private pensions do not increase each year with inflation. The nominal income never increases. It is fixed. Inflation reduces the purchasing power of their income year by year but nominal income does not increase to offset the loss of real income caused by inflation. The standard of living of those on a low fixed income is affected more by inflation than those who work because workers occasionally receive increases in their nominal income.

Explain how inflation affects business certainty, economic growth, and employment

Unstable rates of high inflation lead to business uncertainty. Firms are uncertain about how much their costs of production will be and what the price of the good will be. This makes it difficult to assess potential returns on investment projects thereby reducing total investment in the economy. Firms want to earn a higher **nominal rate of return** on any investment to offset the effect of inflation. This means that less investment will take place because the risk of not making a **positive real return** increases when there are high rates of inflation. Investment is needed for **long-run economic growth** because increasing the quantity and **productivity** of capital leads to an increase in **full-employment levels of output**. Also investment is a component of aggregate demand (AD) and an injection into the **circular flow of income**. The initial investments cause further increases in expenditure and income. As AD increases, firms take on more workers in order to increase supply and **cyclical unemployment** falls. Therefore, as investment falls it will have a negative effect on employment.

Explain how inflation affects international competitiveness

If the rate of inflation is greater in Italy than in countries with which Italy trades, consumers in the other countries have to pay a higher price for Italian goods and the quantity demanded of Italian exports falls. Also Italians will buy fewer domestically produced goods as they switch expenditure away from the relatively more expensive Italian goods to the relatively lower priced imported goods. Expenditure on imports increases and expenditure on exports falls leading to an increase in an existing **current account deficit**. Relatively high rates of inflation lead to a fall in international price competitiveness.

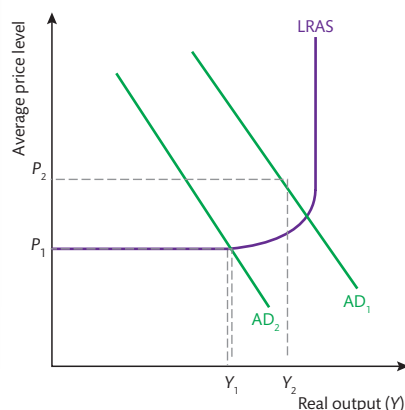


Figure 53.1

Explain the causes and consequences of deflation

Deflation occurs when there is a sustained fall in the average price level. The purchasing power of money increases. As the average price level continues to fall, more and more goods and services can be bought with the same nominal income.

Deflation can be caused by falling aggregate demand. The negative output gap or the deflationary gap, which is the difference between actual output and full-employment level of output, gets bigger as AD falls. This is the difference between Y_2 and Y_1 as shown in Figure 53.1. Falling AD, from AD_1 to AD_2 leads to an excess of **aggregate supply** over aggregate demand and the average price level falls from P_2 to P_1 in order to eliminate it. Total expenditure in the economy is not sufficient to buy all the goods and services produced when all factors of production are employed. Firms **lay off** workers as they reduce output in response to falling demand and **cyclical unemployment** or **demand-deficient unemployment** rises. Remember that the demand for labour is a **derived demand**. It is derived from the demand for goods and services.

Deflation can also be caused by an increase in the full potential level of output. This occurs when there is

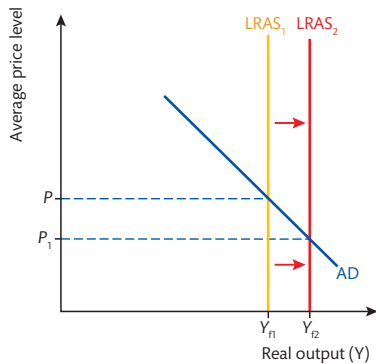


Figure 53.2

an increase in the quantity and/or quality (productivity) of the factors of production. The full-employment level of output is at Y_1 as shown in Figure 53.2. After an increase in the quantity and/or quality of one or more of the factors of full-employment, the level of output increases and the **long-run aggregate supply** (LRAS) curve shifts to the right. Full-employment levels of output increases from Y_1 to Y_2 . This causes an excess of aggregate supply at price level P and the average price level falls to P_1 in order to eliminate it. However, when firms invest in new capital, it increases aggregate demand. If AD increases at the same rate as LRAS, deflation will not occur. Deflation is much more likely to be caused by falls in AD.

As expenditure and prices fall, firms receive less **producer revenue** (price \times quantity sold). Firms reduce output in response to falling consumption. Firms need fewer workers and reduce their labour force. Cyclical or demand-deficient unemployment increases and firms' profits fall. As profits fall, some firms make a **loss** or **negative profit**. Firms can make losses in the short run. Firms will keep trading in the hope that demand for their output will increase in the future. But if losses continue to be made in the long run, firms will close down owing money to their suppliers.

Unemployment rises, therefore **government expenditure** on **unemployment benefit** increases while at the same time government revenue received from income tax falls. A growing deflationary gap might lead to an increase in the **budget deficit** as the difference between government revenue and government expenditure grows.

Consumers delay or hold back consumption of non-necessities if it is expected that prices will continue to fall. A household might delay the purchase of a new car or television set until prices have fallen even more. Aggregate demand continues to fall, increasing levels of unemployment and **bankruptcy** rates.

Consumer confidence is very important in determining levels of aggregate demand. If households believe that they might lose their jobs then they will reduce present expenditure. Deflation reduces the value of assets such as houses and gold. A fall in **wealth** leads to a fall in confidence, which leads to a fall in expenditure.

Deflation leads to an increase in the value of debt because debt repayments are made with money that is increasing in value. Deflation causes the value of household and business debt to rise. Household and business debt repayments are usually fixed. Repayments made by households and firms do not fall as prices fall, therefore the value of the debt rises. Deflation leads to a fall in producer revenue but debt repayments do not fall, thereby the burden of debt increases.

Households continue to make the repayments on the debt. Increasing debt reduces consumer confidence, which in turn reduces expenditure. Deflation increases the real value of business debt. Business loans must be paid back at a time when profits are falling, leading to more bankruptcies. As aggregate demand, revenues, and profits fall firms lack the confidence to invest. Therefore, investment, a component of AD, falls.

Explain the causes of demand-pull inflation

Demand-pull inflation is caused by an excess of aggregate demand over aggregate supply. $AD = \text{consumer expenditure on domestically produced goods (C)} + \text{investment by firms (I)} + \text{government expenditure (G)} + (\text{expenditure on exports (X)} - \text{expenditure on imports (M)})$. For example, an increase in AD might be caused by growing confidence in the economy. Consumer expenditure (C) increases and firms respond to higher levels of consumption by increasing investment (I) and the AD curve shifts up and to the right as shown in Figure 53.3. The increase in AD can be caused by an increase in one or more of the components of AD.

Increasing levels of AD 'pull-up' prices in the economy. Aggregate demand (total expenditure) begins to exceed aggregate supply (total output). Firms increase supply in response to increases in consumption but when

Subject vocabulary

aggregate supply the total supply of goods and services produced in an economy at a given price level in a given time period

cyclical/demand-deficient unemployment unemployment caused by a lack of aggregate demand. Unemployment changes as the economy goes through the business cycle, increasing when AD falls and decreasing when AD rises.

derived demand demand for a good, or factor of production, that is a consequence of the demand for something else

long-run aggregate supply the potential level of national output of a country determined by the quantity and productivity of the factors of production

producer revenue the income a firm receives from consumers in exchange for goods (revenue = price \times quantity sold)

loss total costs are greater than total revenue

negative profit when total cost (explicit cost + implicit cost) is greater than total revenue

government expenditure spending by a government in a specified period of time on such things as transport infrastructure, welfare payments, national defense, education, and health services which is financed by tax revenue and borrowing

unemployment benefit a regular payment made by the government to those who are unemployed

budget deficit occurs when government expenditure is greater than tax revenue

wealth the total monetary value of all assets, including property, shares, and savings that a person owns

demand-pull inflation occurs when aggregate demand is greater than aggregate supply

Glossary

lay off (workers) temporarily end workers' employment due to a lack of work

bankruptcy having to stop trading permanently due to a lack of money

Subject vocabulary

cost-push inflation inflation caused by an increase in the costs of production, resulting in a decrease in aggregate supply

profit margin the percentage of producer revenue that ends up as profit for the firm. Profit margin = profit/producer revenue \times 100. If a firm earns a profit of \$20m from sales of \$80m its profit margin is 25%.

factors of production the inputs into the production process (land, labour, capital and entrepreneurship)

supply-side shocks occurs when there is an unexpected change in the supply of a good resulting in a sudden change in its price

corporation tax a tax levied in the UK on company profits

minimum wage the minimum amount of money a firm is legally allowed to pay a worker for one hour's work

monetary policy the control of the supply of money by the central bank to affect the economy (e.g. changing interest rates)

fiscal policy government policy designed to achieve macroeconomic objectives through government expenditure and taxation

demand-side policies policies that are designed to influence aggregate demand

contractionary monetary policy policy involving the reduction of the money supply and the increase of interest rates

deflationary monetary policy a policy designed to eliminate an inflationary gap through reducing the money supply and increasing interest rates

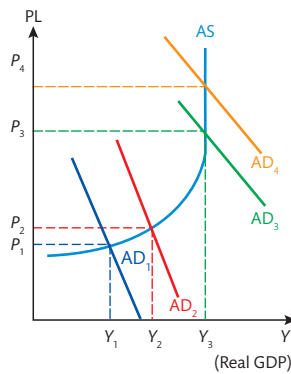


Figure 53.3

Model sentence: When AD rises at a faster rate than AS, the price level rises to eliminate the excess AD.

Explain the causes of cost-push inflation

Model sentence: Cost-push inflation occurs when the costs of production increase, causing firms to increase price in order to maintain profit margins.

Cost-push inflation often occurs in a boom phase of the business cycle when demand for the **factors of production** is high. Increasing demand for raw materials or labour, for example, leads to an increase in their price, thereby causing an increase in the costs of production. Inflation is also caused by **supply-side shocks**. For example, when the price of oil in the early 1970s went up very quickly, the costs of production for industries all over the world went up, leading to cost-push inflation.

If the country's currency depreciates in value relative to other currencies, the price of all imported goods, including raw materials rises. This is called imported inflation. Firms have to pay a higher price for imported raw materials, leading to an increase in the costs of production and in turn to cost-push inflation.

Governments can cause inflation. An increase in **corporation tax** reduces company profits. Firms may increase the price of their goods. An increase in the **minimum wage** causes an increase in the costs of production and firms may increase the price of their goods in order to maintain profit margins.

This is shown in Figure 53.4 as a shift up and to the left of the short-run aggregate supply curve from $SRAS_1$ to $SRAS_2$. The average price level rises, causing aggregate demand to fall. Real output falls from Y_1 to Y_2 leading to a rise in unemployment.

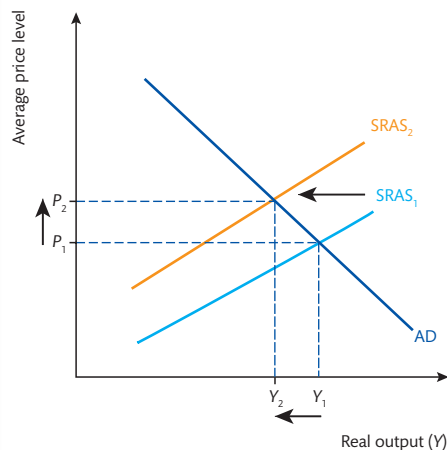


Figure 53.4

Model sentence: Increases in the cost of production cause both inflation and demand-deficient unemployment.

Explain how an increase in interest rates reduces aggregate demand

Governments use both **monetary policy** and **fiscal policy** to control inflation. These policies are **demand-side policies** because the aim of the policies is to change the level of aggregate demand. Monetary policy is concerned with controlling the money supply in the economy and this is usually achieved by changing interest rates. **Contractionary monetary policy** or **deflationary monetary policy** is introduced by government to reduce the supply of money and thereby reduce spending in an economy. The main way the supply of money is reduced is by increasing interest rates.

Although in most countries the setting of interest rates is controlled by the central banks and not governments, the main objective of most central banks is to keep inflation low and stable, and they try to achieve this by managing interest rates.

Fiscal policy is concerned with government expenditure and government tax revenue. A contractionary or deflationary fiscal policy aims to reduce AD by reducing expenditure and increasing taxes. If inflation is caused by excess aggregate demand (demand-pull) then reducing expenditure in the economy should reduce the rate of inflation.

(Remember: $AD = C + I + G + (X - M)$)

Government or central banks increase the interest rate in order to reduce inflationary pressures caused by high levels of expenditure. Households borrow money from banks in order to bring forward consumption of relatively higher priced durables such as TVs, washing machines, carpets, and cars. Increasing the interest rate increases the cost of borrowing and in effect increases the price the consumer pays for the good. As the cost of borrowing rises, expenditure (C) on these items falls, therefore AD falls.

Higher interest rates means higher interest payments on existing loans. Households with **mortgages** must pay more each month in interest payments on the loan thereby reducing **discretionary income** and in turn household expenditure (C). Some firms are **highly geared**. This means much of their investments have been financed by borrowing. Higher interest rates leads to higher interest payments on the loans and a fall in profit leaving firms with less profit to invest so investment (I) falls.

As interest rates rise, the cost of investment projects increase because interest payments on the loan increase. *Ceteris paribus*, as interest rates rise profit made on each investment falls therefore firms are less likely to make the investment. Higher interest rates leads to a fall in investment (I) therefore AD falls. As interest rates on savings accounts increase the minimum opportunity cost of any investment increases. Instead of investing in **productive capacity**, which comes with a relatively high risk, the firm may simply choose to place the money in a savings account and earn the interest payments at zero risk.

Model sentence: As interest rates rise the cost of borrowing increases reducing expenditure that is financed through loans.

Relatively high interest rates attract **financial capital** from abroad from individuals and **financial institutions** looking for higher returns on their money. Demand for the currency rises and it appreciates against other currencies. As the price of the currency rises, the price foreigners pay for the country's exports increases leading to a fall in quantity demanded of exports (X), therefore AD falls.

A high rate of interest leads to an increase in saving. More of households' disposable income is saved. If income is saved, it cannot be spent on goods and services.

Model sentence: *Ceteris paribus*, as interest rates rise the incentive to save increases. The more income that is saved by households, the less is spent. Therefore, as the interest rate rises, AD falls.

Explain how a fall in government expenditure and increases in taxes reduces aggregate demand.

Keynesians argue that the government should manage aggregate demand in order to achieve its macroeconomic objective of low and stable inflation. Taxes can be increased and government expenditure (G) reduced to reduce excess aggregate demand and bring the average price level down.

If the government increases income tax **disposable incomes** fall, leading to a fall in household expenditure on domestically produced goods (C). An increase in corporation tax reduces the incentive for firms to invest as less profit from each investment is made. Also after-tax profits fall leaving less profit available for investment (I), therefore AD falls. Government can reduce government expenditure (G) by spending less on **merit goods** and public goods and by reducing benefit payments, thereby reducing AD. Cuts in government expenditure and increases in tax lead to a fall in the **government's borrowing requirement** and the government might be able to achieve a **balanced budget**, where government expenditure equals tax revenue.

Model sentence: As tax rates increase, household disposable income and company profits fall, leading to a fall in household expenditure and business investment.

As aggregate demand falls, firms respond by reducing output. Therefore, demand for the factors of production fall leading to a fall in factor prices. This lowers the costs of production, thereby reducing inflationary cost-push pressures.

Subject vocabulary

mortgages loans that are secured against property

discretionary income income after tax and expenditure on basic necessities such as rent, heating, and food

highly geared a company that has a large amount of debt in proportion to the value of the shares issued

productive capacity the maximum possible output of a firm, industry, or an economy

financial capital the money used by firms and entrepreneurs to purchase the resources needed to produce goods or services

financial institution a business, such as a bank, that provides a service allowing firms and households to make deposits and take out loans and to make investments

disposable income household income after direct taxation has been deducted

merit good a good/service that the government believes will be under consumed left to the free market. Consumption of a merit good may generate positive externalities therefore the social benefit of consumption is greater than the private benefit. Individuals do not take into account the positive externalities when deciding the amount to consume therefore the good is underprovided and under consumed.

government's borrowing requirement the amount of money a government needs to borrow in order to offset its budget deficit

balanced budget occurs when the tax revenue received by a government is equal to government expenditure

Subject vocabulary

public sector the part of an economy that is controlled by the state. It concerns the provision of government services including national defence, education, and health.

private sector the part of the economy that is regulated but not controlled by the state and concerns individuals and groups bringing together the factors of production normally with the aim of making a profit

supply-side policies government policy designed to affect the level of aggregate supply in an economy by increasing the quantity and/or productivity of the factors of production

productivity the quantity of output per unit of input

state monopolies state-owned sole suppliers of goods and services

entrepreneur an individual who, in pursuit of profit, brings together the other factors of production in order to produce a good or service

international trade the cross-border exchange of goods and services

tariffs a tax placed on imported goods and services

quota a physical limit placed on the number of goods that can be traded or produced

open economy an economy in which firms engage in the international exchange of goods and services

external supply-side shock occurs when there is an unexpected change in the supply of a good produced abroad that results in a sudden change in its price

Glossary

trade-off a situation that involves giving up something in return for gaining another thing

Governments can affect the inflation rate directly by controlling wages and prices in the **public sector**. If the state owns industries and services, it employs lots of workers such as nurses, teachers, railway workers, bus drivers, and post office workers. The government can minimize wage increases in the public sector. Reducing the real wage of the public sector workers reduces government expenditure and may persuade those in the **private sector** to accept cuts in their real wage. The government could minimize price increases of goods and services produced by state-owned industries. However, profits will fall and any losses must be subsidized by the taxpayer. The influence a government has is dependent on the number of industries under state control. The government can reduce indirect tax on goods, thereby reducing costs of production; for example, by reducing duty on petrol.

Explain how a fall in the rate of inflation can be achieved using supply-side policies

The objective of **supply-side policies** is to increase the quantity and quality (**productivity**) of the factors of production. This causes the aggregate supply curve to shift down and to the right pushing the average price level down. Increasing the full employment level of output of the economy leads to a shift to the right of the LRAS curve, which means that it is possible for excess aggregate demand to be eliminated by increases in aggregate supply, thereby holding the average price level down. The following are examples of supply-side policies: the provision of subsidies to firms to increase the amount of training of workers; making markets more price competitive by removing barriers to entry into industries; privatizing **state monopolies**; introducing strong laws on anti-competitive behaviour; and reducing tax on profits to encourage investment in new capital and to encourage potential **entrepreneurs** to set up businesses. **International trade** can be encouraged by removing **tariffs** and **quotas**. Domestic firms must become more productive if they are to compete with the most efficient firms in the world. By trading with other countries, consumers and producers can buy lower priced imported goods and services, reducing firms' costs of production and increasing the purchasing power of household income.

Evaluate government policies to deal with the different types of inflation

In the short run, government can try to keep inflation low and stable by managing aggregate demand through fiscal and monetary policy. The aim is to keep aggregate demand at a level that is enough to buy full- or nearly full-employment levels of output. When aggregate demand exceeds aggregate supply, causing demand-pull inflation, governments introduce deflationary policies to reduce aggregate demand and bring down the price level. Lowering aggregate demand reduces demand for the factors of production, including labour, lowering factor prices, and thereby reducing cost-push inflationary pressures. However, the fall in demand for labour leads to higher levels of demand-deficient unemployment. There is a **trade-off** between inflation and unemployment. Government tax revenue falls and government expenditure rises as benefit payments increase. This can cause a budget deficit and the government must borrow from the financial markets, thereby increasing the national debt.

Trade is becoming more globalized. Most countries have **open economies**. Inflation in one country can be caused by what happens in other countries. Controlling inflation by managing aggregate demand will not be successful if cost-push inflation is caused by **external supply-side shocks**, such as oil price increases caused by disruption of the world supply of oil.

Deflationary fiscal and monetary policies are unpopular with households and firms because higher taxes and interest rates reduce company profits and household income. Politicians do not want to upset the voters before an election for fear of losing votes.

Governments are not able to change fiscal policy quickly. There is a long legislative process that must be gone through before a deflationary fiscal policy can be introduced and after such a policy is introduced it takes time for households to change their patterns of consumption in response to a fall in disposable income. Therefore, it is not possible for government to use fiscal policy to quickly affect levels of aggregate demand. Governments find it very difficult to make real cuts in government expenditure. They have many commitments, such as the provision of state pensions, transport infrastructure, health services, and other merit and public goods. With growing demands and expectations, it is very difficult for governments to make cuts in public spending. Because of the limitations of fiscal policy, governments tend to favour the use of interest rates to manage levels of aggregate demand.

Relatively high taxes and interest rates discourage investment and entrepreneurship. The less income people keep for themselves, the less likely they are to risk their time and money starting a new business and there is less incentive for firms to make investments. The higher the cost of borrowing, the lower the return on any investment funded through borrowed money; therefore, the less likely firms are to borrow to invest. Deflationary policy therefore has a negative impact on the future potential levels of output of an economy. It is easier for a government to control inflation if the potential output of the economy is steadily growing. As stated

before, this is achieved through supply-side policies aimed at increasing labour mobility, market competitiveness, innovation, and productivity. Aggregate demand can steadily increase without demand-pull and cost-push inflationary pressures building up.

A summary of the main points

Fiscal and monetary policies are used to reduce AD, thereby reducing demand-pull and cost-push inflation. However, doing so can cause unemployment, leading to a budget deficit and an increase in the national debt.

Imported inflation cannot be controlled by reducing AD.

Tax increases are unpopular so politicians may not be prepared to introduce this policy through fear of not being re-elected.

There is long time lag between an increase in tax and changes in aggregate demand.

Governments have spending commitments so it is very difficult to make real cuts in expenditure that will reduce aggregate demand.

Higher rates of tax discourage investment by firms and entrepreneurial activity leading to a reduction in long-run economic growth.

Fiscal policy has many disadvantages; therefore, some governments prefer to use interest rates as a method of controlling inflation and use supply-side policies to increase productivity and LRAS, thereby reducing demand-pull inflationary pressures.

Test your understanding of this unit by answering the following questions

- Using diagrams, distinguish between demand-pull and cost-push inflation.
- Explain the consequences of deflation.
- Discuss the effectiveness of deflationary demand-side policies as a cure for inflation.

Subject vocabulary

inflation an increase in the general level of prices of goods/services in an economy over a given time period, usually a year

unemployment occurs when there are people actively looking for work at the equilibrium wage rate but are not able to find work

negative causal relationship a change in the value of one variable causes the value of the other variable to change in the opposite direction. For example, an increase in price causes a fall in quantity demanded.

wage payment to labour

aggregate demand the total demand for goods and services in the economy at a given price level in a given period of time

Learning Outcomes

- Discuss, using a short-run Phillips curve diagram, the view that there is a possible trade-off between the unemployment rate and the inflation rate in the short run.
- Explain, using a diagram, that the short-run Phillips curve may shift outwards, resulting in stagflation (caused by a decrease in SRAS due to factors including supply shocks).
- Discuss, using a diagram, the view that there is a long-run Phillips curve that is vertical at the natural rate of unemployment and therefore there is no trade-off between the unemployment rate and the inflation rate in the long run.
- Explain that the natural rate of unemployment is the rate of unemployment that exists when the economy is producing at the full-employment level of output.

Discuss the possible trade-off between the unemployment rate and the inflation rate in the short run

The trade-off between **inflation** and **unemployment** is based on the assumption that there is a **negative causal relationship** between money **wages** and levels of unemployment.

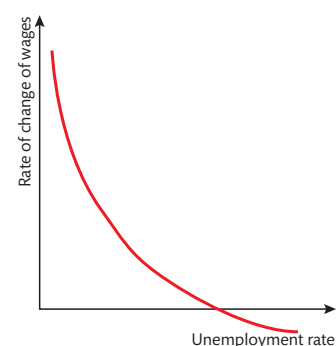


Figure 54.1

When **aggregate demand** (AD) increases from a very low level, firms increase their demand for labour but, because there is a relatively large supply of unemployed workers and because demand for workers is still relatively low, money wages do not increase. As AD continues to increase and the economy moves towards a boom and full-employment levels of output, the supply of unemployed workers falls. Firms must compete with each other to employ the falling number of unemployed workers thereby pushing up money wages. Also firms offer higher wages to attract workers already employed by other firms. So as unemployment falls, money wages increase. When the **business cycle** moves back towards a recession, with falling levels of AD, firms reduce output and **lay off** workers. Unemployment grows and workers might accept lower money

Subject vocabulary

business cycle the fluctuations in economic activity over time. There are four stages of the business cycle: (1) recession, when economic activity slows down; (2) trough, when the recession is at its deepest; (3) recovery, when the economy begins to grow; and (4) peak/boom, when economic activity is high.

Glossary

lay off (workers) temporarily end workers' employment due to a lack of work

Subject vocabulary

costs of production the amount the firm pays for the factors of production used to produce goods or services

cost-push inflation inflation caused by an increase in the costs of production, resulting in a decrease in aggregate supply

full-employment level of output the potential quantity of output that can be produced in an economy when all factors of production are employed

Phillips curve a graphic representation of the inverse relationship between unemployment and inflation

stagflation occurs when an economy experiences a period of increasing inflation, negative or zero economic growth, and rising unemployment

demand-deficient unemployment

unemployment caused by a lack of aggregate demand. Unemployment changes as the economy goes through the business cycle, increasing when AD falls and decreasing when AD rises.

short-run aggregate supply

SRAS shows the amount of total output firms are willing to produce and sell in an economy at each price level in a given period of time when factor productivity and factor prices are held constant

price level the current weighted average price of a selected group of goods and services produced in a country over a period of time

wages in order to keep their jobs. So as unemployment increases money wages fall. Figure 54.1 shows the relationship between the rate of change of money wages and the rate of change of unemployment.

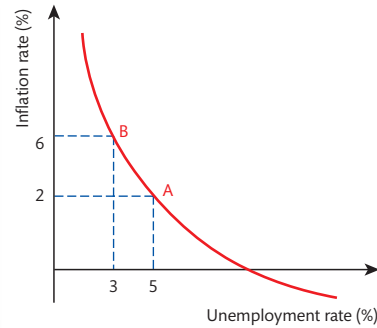


Figure 54.2

The **Phillips curve**, named after Bill Phillips, an economist who in the 1950s researched the relationship between money wages and unemployment, shows the trade-off between the rate of inflation and the rate of unemployment.

Model sentence: As AD rises, firms increase their demand for labour in order to increase output; therefore, unemployment falls. But increases in AD lead to demand-pull and cost-push inflation. There is a trade-off between unemployment and inflation.

In the 1970s many countries experienced long periods of stagflation. **Stagflation** occurs when inflation is high but aggregate demand is 'stagnant' (low for a long period of time). There was no trade-off between unemployment and inflation. Countries had at the same time high levels of **demand-deficient unemployment** and high levels of inflation. This is not what the theory says should happen. The theory was criticized by many economists because there was no trade-off between unemployment and inflation happening in the real world.

Explain, using a diagram, that the short-run Phillips curve may shift outwards, resulting in stagflation

Supply-side shocks cause stagflation. For example, when the price of oil rose quickly during the early 1970s, costs of production for firms around the world increased quickly, leading to cost-push inflation.

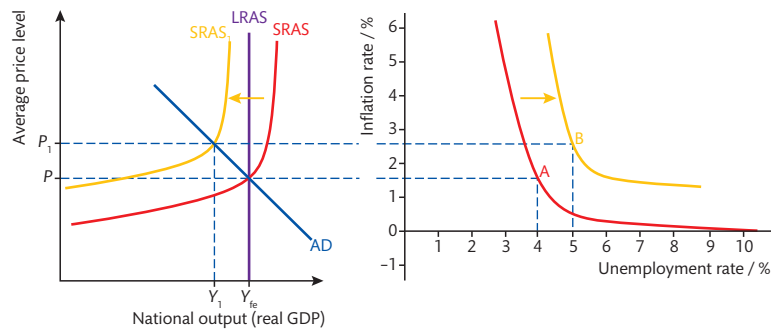


Figure 54.3

An increase in the cost of production leads to a shift up and to the left of the **short-run aggregate supply** curve from SRAS to SRAS₁ as shown in Figure 54.3. This causes a rise in the average **price level** from P to P₁ and a fall in output from Y_{fe} to Y₁. As firms reduce output, they lay off workers therefore unemployment increases. The country has at the same time rising prices and rising unemployment. At each rate of inflation the rate of unemployment is now higher. To show this new relationship between inflation and unemployment the Phillips curve shifts out to the right. Before the supply-side shock at the long-run equilibrium full-employment the economy is at point A on the Phillips curve. After the supply-side shock both the rate of unemployment and the rate of inflation are higher at point B. Stagflation can be caused by any changes in the economy that lead to a rise in the costs of production such as increases in taxes on businesses and increases in the price of factors of production. Increases in the cost of production cause cost-push inflation and the SRAS curve shifts up and to the left. Firms lay off workers as they reduce output leading to an increase in unemployment and the price level and the Phillips curve shifts up and to the right.

Model sentence: A supply-side shock causes an increase in the cost of production leading to cost-push inflation. Short-run aggregate supply falls causing an increase in the price level which leads to a fall in expenditure. Firms lay off workers to reduce supply and unemployment rises.

Discuss, using a diagram, the view that there is no trade-off between unemployment and inflation in the long run

New classical economists believe that the economy will always move towards the **long-run macroeconomic equilibrium** at full-employment levels of output.

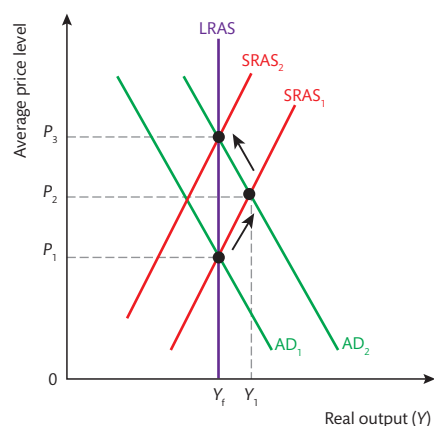


Figure 54.4

As the price level rises, total expenditure falls and there is a movement up and along the AD curve AD_2 . The economy automatically returns to the long-run equilibrium, P_3, Y_f , at the full-employment level of output. The only changes brought about by the increase in aggregate demand from AD_1 to AD_2 are an increase in wages and an increase in the price level from P_1 to P_3 . Employment increases above full-employment levels but only in the short run, quickly returning to the long-run equilibrium level. So new classical economists argue that there is no trade-off between inflation and unemployment.

Workers that get a wage increase may believe that they are now able to buy more goods and services and are therefore better off. However, inflation reduces the real value of the wage. If inflation rises at the same rate as wages the workers are in fact no better off. Real wage does not change. Workers who believe they are better off after an increase in the money wage but in fact are not because of the effect inflation has on the real wage are experiencing **money illusion**.

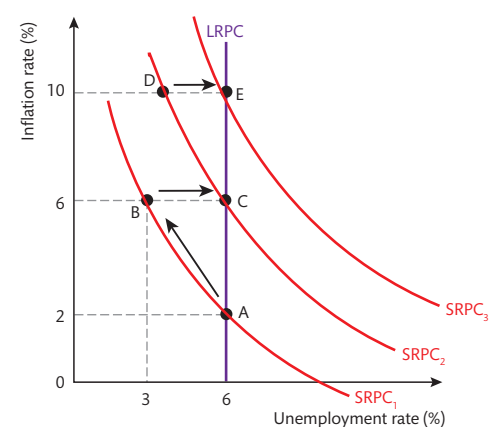


Figure 54.5

At the higher money wage, the rate of **voluntary unemployment** falls. Some people, who before the wage increase did not want to supply their labour, will now enter the labour market because of the increase in wages. Unemployment in the short run falls from 6% to 3%. The rise in inflation and the fall in unemployment caused

For example, an increase in AD leads to an increase in the demand for labour causing **excess demand** for labour in the labour market. Therefore, the wage rate rises to remove the excess demand. An increase in wages leads to an increase in the costs of production. Believers in the new classical model argue that, if there is no intervention in the labour market and wage rates are perfectly flexible, wages will rise immediately when demand for labour increases. Therefore, costs of production immediately increase. In Figure 54.3 the AD curve shifts up and to the right. The **short-run macroeconomic equilibrium** level of output, P_2, Y_1 , which is greater than the full-employment level of output, exists only for a very short period of time. Wages increase leading to an increase in the costs of production and a shift up and to the right of the SRAS curve, from $SRAS_1$ to $SRAS_2$.

In Figure 54.4 at point A the rate of inflation is 2% and the rate of unemployment is 6%. The economy is at the long-run equilibrium level of output. Therefore, there is no demand-deficient unemployment. Unemployment is made up from **frictional unemployment** and **structural unemployment**. Together they make up **natural unemployment**. Therefore at point A the natural rate of unemployment is 6%. If the government, for example, introduced an **expansionary fiscal policy** to reduce unemployment below 6%, the increase in AD would lead to **demand-pull inflation** and cost-push inflation. At the same time there is an increase in the demand for labour as firms increase output. The increase in the competition for labour pushes wages up.

Subject vocabulary

long-run macroeconomic equilibrium occurs when total expenditure is sufficient to buy the potential output in a given period of time. It is represented by the intersection of the AD and LRAS curves.

excess demand occurs when quantity demanded is greater than quantity supplied

short-run macroeconomic equilibrium occurs where aggregate demand is equal to short-run aggregate supply

money illusion the idea that people consider the nominal value of money rather than its real value thus ignoring the purchasing power of their income. People therefore have an unrealistic picture of their income and wealth.

frictional unemployment occurs when people move from one job to another and when people leave voluntary unemployment to look for work

structural unemployment unemployment caused by a change in the type of labour firms demand. It is caused by a mismatch of the skills of those unemployed and the skills needed by firms.

natural unemployment the combination of frictional and structural unemployment a certain amount of which always occurs in an economy. Therefore natural unemployment exists when an economy is producing at full-employment levels of output.

expansionary fiscal policy policy involving the increase of government spending and/or the reduction of taxation

demand-pull inflation occurs when aggregate demand is greater than aggregate supply

voluntary unemployment occurs when people choose not to work at the equilibrium wage

by the increase in AD is shown as a movement up and along the short-run Phillips curve $SRPC_1$ from point A to point B.

At first those people who enter the labour market because of the higher money wage have money illusion. They did not take into account the effect of inflation on wages. As soon as they understand that inflation has reduced the value of the higher nominal wage they will stop working and leave the labour market.

Now that the rate of inflation has increased, workers will expect prices to continue to rise into the future. In Figure 54.4 (on page 157) workers expect prices to carry on increasing by 6% each year. Workers talk with the owners of firms to get a wage increase. Workers are likely to get a wage increase because demand for workers is high at point B. However, as wages increase, the demand for workers falls: firms lay off workers and unemployment rises. The economy is now at full-employment level of output at point C. The rate of unemployment has gone back to 6% but inflation is now higher at 6%. Government policy introduced to reduce unemployment by increasing AD has failed.

The government continues to use **demand-side policies** to increase aggregate demand in order to reduce unemployment. AD rises, leading to demand-pull inflation and cost-push inflation. The rate of inflation increases from 6% to 10%. At the same time, firms demand more workers in order to increase output, and unemployment falls from 6% to 3%. So in the short run there is a trade-off between unemployment and inflation and a movement up and along $SRPC_2$. With higher expected inflation, workers demand higher wages to offset the effects of expected inflation on the real value of the money wage. In the long run, as wages increase, firms lay off workers and unemployment moves back to its natural rate of 6% but inflation has now increased to 10% shown as point E.

When the economy is at full-employment levels of output, there are always some people unemployed. There will always be those people who are frictionally unemployed, meaning they are between jobs and searching for work, and school and university leavers looking for their first jobs. There are people who are **occupationally immobile**, meaning they do not have the skills demanded by industry and there are people who are **geographically immobile**, meaning even if they do have the skills demanded by industry they are unable to move to where the jobs are. The **natural rate of unemployment** is made up from these people. As explained above, the government can reduce unemployment below its natural rate by increasing levels of aggregate demand but only in the short run. In the long run, unemployment returns to its natural rate but with a higher rate of inflation. There is no trade-off between unemployment and inflation in the long run.

The **long-run Phillips curve** (LRPC in Figure 54.4 on page 157) is vertical at the natural rate of unemployment where the economy is at the long-run macroeconomic equilibrium at full-employment levels of output. When the government tries to reduce unemployment below the natural rate using demand-side policies it causes inflation without any effect, in the long run, on the rate of unemployment. Because of this, the natural rate of unemployment is also called the **non-accelerating inflation rate of unemployment** (NAIRU). It is the rate of unemployment required for a stable, 'non-accelerating' rate of inflation.

Model sentence: At the non-accelerating rate of unemployment the rate of inflation is constant because the demand for labour is not changing and therefore wages are stable. When the demand for labour rises because of increases in AD, wages are pushed up leading to cost-push inflation.

Test your understanding of this unit by answering the following questions

- Discuss, using a short-run Phillips curve diagram, the view that there is a possible trade-off between the unemployment rate and the inflation rate in the short run.
- Explain, using a diagram, the possible causes of stagflation.
- Discuss, using a diagram, the view that there is no trade-off between the unemployment rate and the inflation rate in the long run.

Subject vocabulary

demand-side policies

policies that are designed to influence aggregate demand

occupational immobility

occurs when workers do not have the necessary skills to change jobs

geographically immobile

describes workers who are unable to relocate in order to find work, often because of the high costs of moving

natural rate of unemployment

the rate of unemployment at which inflation stabilises. At the natural rate of unemployment, all who want to work at the market wage can find work therefore there is no involuntary unemployment.

long-run Phillips curve

a vertical line at the natural rate of unemployment showing that in the long-run there is no relationship between unemployment and inflation

non-accelerating inflation rate of unemployment

the rate of unemployment that occurs in an economy without causing a change in the rate of inflation. If unemployment increases above this level the rate of inflation falls if unemployment falls inflation increases.

Learning Outcomes

- Define economic growth as an increase in real GDP.
- Describe, using a production possibilities curve (PPC) diagram, economic growth as an increase in actual output resulting from factors such as the utilization of unemployed resources and increases in productive efficiency, leading to a movement of a point inside the PPC to a point closer to the PPC.
- Describe, using a PPC diagram, economic growth as an increase in production possibilities caused by factors including increases in the quantity and quality of resources, leading to outward PPC shifts.
- Describe, using an LRAS diagram, economic growth as an increase in potential output caused by factors including increases in the quantity and quality of resources, leading to a rightward shift of the LRAS curve.
- Evaluate the view that increased investment is essential to achieve economic growth.
- Evaluate the view that improved productivity is essential to achieve economic growth.
- Discuss the possible consequences of economic growth, including the possible impacts on living standards, unemployment, inflation, the distribution of income, the current account of the balance of payments, and sustainability.

What is economic growth?

Economic growth is a macroeconomic objective of most governments. The three ways in which economic growth can be measured and the distinction between **nominal GDP** and **real GDP** are discussed in detail in Section 2.1 – The level of economic activity.

There are three ways to calculate GDP. The output method is the monetary value added to the inputs in the production process by all firms in the economy. The cost of the **resources** used in the production are subtracted from the sales revenue (price \times quantity sold) in order to calculate the monetary value added by the firm. This means that the resources are not double counted. The income method is the sum of all payments made by firms to households for the use of the **factors of production**. It is the sum of wages, rent, profit, and interest. The expenditure method is the monetary value of total spending on goods and services in a given year.

Calculation of GDP is achieved through the addition of the price of all final goods produced in a country in a given year. GDP that measures the value of output in current prices is called nominal GDP. Increases in GDP year on year can occur because prices have increased. In other words, increases in GDP can occur because of inflation rather than an increase in economic performance. Nominal GDP will overstate any increase in the value of output. To calculate the real value of the output from one time period to another, the effects of inflation on the value of GDP must be taken into account. Nominal GDP is adjusted to take into account the effects of inflation on the value of output in order to value output at constant prices. Real GDP = nominal GDP adjusted for inflation.

Model sentence: Economic growth is an increase in the monetary value of total income, total expenditure, or total output of a country taking into account the effects of inflation.

Subject vocabulary

nominal GDP gross domestic product that has not been adjusted to take into account the effect of inflation

real GDP the value of all output of an economy produced in a given period of time, usually a year, adjusted to take into account the effect of inflation

resources the inputs into the production process, the factors of production

factors of production the inputs into the production process (land, labour, capital and entrepreneurship)

capital (goods) manufactured goods that are used in the production of other goods

consumer goods goods that are ultimately consumed by households rather than goods used by firms in the production of another good

What is a production possibility curve (PPC)?

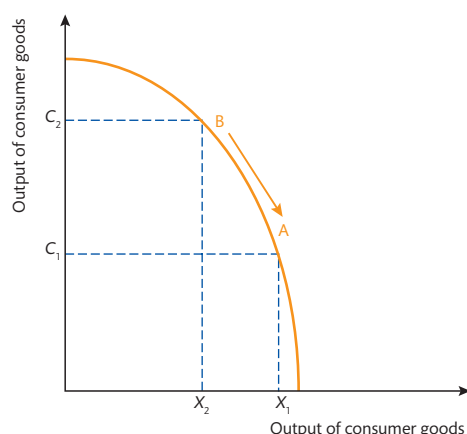


Figure 55.1

A PPC is a curve that shows the various combinations of goods that an economy is able to produce at a given time when the quantity of all factors of production and technology (quality/productivity of the factors) are fixed and all factors are employed efficiently.

The economy can produce two types of goods: **capital** goods and **consumer** goods. At point A on the PPC all factors are employed efficiently and quantity X_1 of consumer goods and C_1 of capital goods are produced. If the country wants to produce more capital goods it has to take away factors from the production of consumer goods and use the factors to make capital goods. As fewer factors are now used to produce consumer goods the quantity

Subject vocabulary

opportunity cost the next best alternative forgone

aggregate demand the total demand for goods and services in the economy at a given price level in a given period of time

aggregate supply the total supply of goods and services produced in an economy at a given price level in a given time period

full-employment level of output the potential quantity of output that can be produced in an economy when all factors of production are employed

expansionary fiscal policy policy involving the increase of government spending and/or the reduction of taxation

technically efficient describes a firm which maximises output with its given inputs

investment the addition to capital stock

capital (goods) manufactured goods that are used in the production of other goods

potential output the maximum output an economy can produce when all resources are efficiently employed

long-run aggregate supply the potential level of national output of a country determined by the quantity and productivity of the factors of production

that can now be made falls. As more factors are now used to produce capital goods it is possible to make more of them. This is shown in Figure 55.1 (on page 159) as the move from point A to point B. Output of capital goods increases from C_1 to C_2 , and output of consumer goods falls from X_1 to X_2 .

In order to increase the quantity of capital goods from C_1 to C_2 , the country has to give up $X_1 - X_2$ of consumer goods. The **opportunity cost** of the increase in the quantity of capital goods is the quantity of consumer goods foregone. If the economy is producing within the PPC it means that some factors are unemployed. It is not possible for the economy to produce at a point outside the PPC because it does not have enough factors or the factors are not productive enough to produce that quantity of goods.

Model sentence: When the economy is producing on the PPC, all factors are employed; therefore, the economy cannot increase the quantity of one good without reducing the quantity of the other.

Describe how economic growth can be shown on a PPC diagram and an AD/AS diagram

Short-run economic growth is an increase in real output caused by increases in **aggregate demand** or short-run **aggregate supply**. In the short run, a variable quantity of factors are added to a quantity of fixed factors to produce output. At real output Y_1 , shown in Figure 55.2a, not all factors are employed. There is a deflationary gap, which is the difference between actual real output Y_1 and **full-employment level of output** Y_f . When AD increases from AD_1 to AD_2 (perhaps because the government has introduced an **expansionary fiscal policy**), firms increase output by employing more workers by using more of their existing fixed quantity of capital. Real output increases from Y_1 to $Y_2 = Y_f$. Unemployment of factors falls as more factors are employed to increase output in response to an increase in AD. This fall in unemployment and increase in real output is shown in the PPC diagram, Figure 55.2b, as a movement towards the PPC from point a to point b. The economy is producing more of both capital and consumer goods in response to increases in AD.

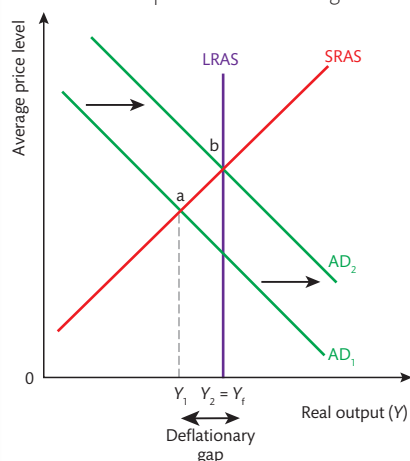


Figure 55.2a

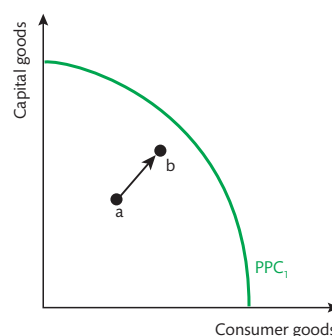


Figure 55.2b

Short-run growth can also be caused by firms using existing factors more efficiently. If firms in the economy became more **technically efficient** with their given quantity of factors, they could increase output. The SRAS curve shifts down and to the right, the price level falls leading to an increase in the quantity of AD. This increase in technical efficiency and the resulting increase in real output is shown in Figure 55.2b as a movement from a to b.

In the long run, the quantity and quality (productivity) of all factors of production are variable. Long-run economic growth is an increase in potential GDP caused by increases in the quantity and quality of the factors of production. For example, an increase in the working population, increases in **investment** leading to an increase in the amount of **capital**, increases in the productivity of labour through training, and improvements in the technology that makes capital more productive are all factors that increase potential full-employment levels of output. The increase in **potential output** is shown in Figures 55.3a and 55.3b as a shift to the right of the **long-run aggregate supply** curve from $LRAS_1$ to $LRAS_2$ and a shift outwards of the production possibility curve from PPC_1 to PPC_2 .

Model sentence: Short-run economic growth is caused by increases in AD and/or SRAS, and long-run economic growth is caused by increases in the quantity and/or quality of the factors of production.

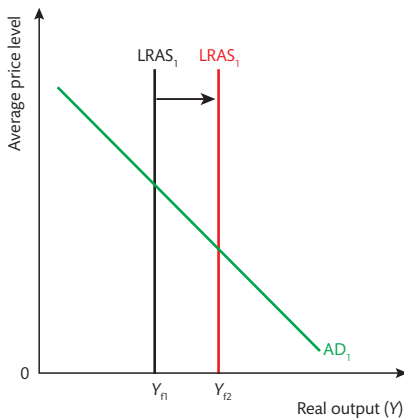


Figure 55.3a

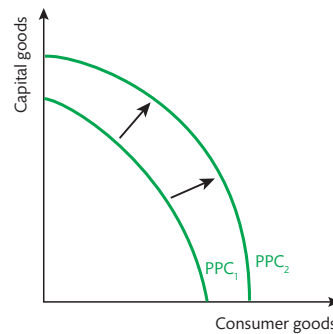


Figure 55.3b

Explain how investment and improved productivity causes economic growth

Human capital is a measure of the quality of labour in terms of labour's ability to produce goods and services. The better educated labour is and the more skills labour has, the greater the value of human capital. Investment in human capital comes mainly from education at schools, technical colleges and universities, training given by firms in the workplace, and the provision of healthcare services. Investment in human capital will increase **labour productivity**. **Output per head** increases, thereby increasing full-employment levels of output, shifting the LRAS curve to the right and the PPC outwards.

Increases in training will reduce **occupational immobility** caused by changing patterns of demand thereby reducing **structural unemployment** and the **natural rate of unemployment**. This increases the quantity of workers willing and able to work, thereby increasing potential output and shifting the LRAS curve to the right. It will also increase AD because the workers who are now employed earn an income, some of which will be spent. Better qualified, more highly skilled workers earn higher incomes leading to increases in AD.

The higher the value of human capital, the greater the ability to be inventive and innovative. For example, scientists and engineers make discoveries that lead to increases in the **state of technology**, which in turn lead to increases in the **productivity** of capital, which then leads to an increase in the full-employment level of output and a shift to the right of the LRAS curve.

Investment is expenditure by firms in the private sector and government on capital goods. It is a **component** of AD and, therefore, increases in investment lead to increases in AD, which in turn leads to increases in real output. Investment is the addition to the stock of capital; therefore, an increase in investment is an increase in the quantity of capital, which leads to an increase in full-employment level of output. Potential output increases leading to long-run economic growth and the LRAS curve shifts to the right and the PPC moves outwards.

When firms and the government invest it is likely that they will buy more technologically advanced capital that is more productive than the old capital. The increase in productivity means that potential output is greater, leading to long-run economic growth and the LRAS curve shifts to the right and the PPC moves outwards.

A country's **natural resources** might include **hydro-power**, mineral water, oil, natural gas, tin, iron **ore**, lead, and timber. Many natural resources are non-renewable. Some countries are dependent on their natural resources for their income. Economies in the Middle East have grown through the **extraction** and sale of oil. In the UK the discovery and extraction of North Sea oil led to an increase in the potential output of the UK. When a country finds new **reserves** of a natural resource potential output increases causing the LRAS curve to shift to the right and the PPC to shift outwards. Also as more income is earned in the industries extracting the natural resources AD increases leading to a rise in real output.

Discuss the importance of improved productivity and the consequences of economic growth

Growing **real incomes** leads to increases in AD causing **demand-pull inflation** due to excess AD. Increases in the productivity of the factors of production increases the potential output of a country and shifts the LRAS curve to the right. Aggregate supply meets the higher levels of aggregate demand, thereby reducing the inflationary pressures. The strength of the inflationary pressure is determined by the rate of change in AD and

Subject vocabulary

labour productivity the quantity of goods that a worker produces in a given period of time

output per head a measure of the productivity of the workforce (output divided by the number of workers)

occupational immobility occurs when workers do not have the necessary skills to change jobs

structural unemployment unemployment caused by a change in the type of labour firms demand. It is caused by a mismatch of the skills of those unemployed and the skills needed by firms.

natural rate of unemployment the rate of unemployment at which inflation stabilises. At the natural rate of unemployment, all who want to work at the market wage can find work therefore there is no involuntary unemployment.

state of technology the current level of technology that when put to use in the production of capital goods determines capital productivity

productivity the quantity of output per unit of input

natural resources assets, such as mineral deposits and timber, that occur in nature and can be used in production

real income income after taking into account the effects of inflation on purchasing power

demand-pull inflation occurs when aggregate demand is greater than aggregate supply

Synonyms

component(s) part(s)

hydro-power water power

extraction removal

Glossary

ore rock or earth from which metal can be taken

reserve(s) supply(ies) of something that is/are kept and used when needed

Subject vocabulary

productive capacity the maximum possible output of a firm, industry, or an economy

excess capacity occurs when actual output is less than the quantity of output that could be produced if all factors were employed

average total cost equal to total cost divided by quantity of output

quantity demanded the amount of a good consumers are willing and able to buy at a given price over a given period of time

current account balance the sum of the value of exported goods and services, minus the sum of the value of imported goods, plus net income from abroad and net current transfers

marginal propensity to import the proportion of additional income that an individual spends on imported goods and services. MPM = the change in expenditure on imports divided by the change in income.

negative externalities occur when the production or consumption of a good creates costs that must be paid by third parties. The existence of negative externalities means that social cost is greater than private cost.

market failure when resources are not allocated or used efficiently

tax revenue the income the government receives through the levying and collection of taxes

merit good a good/service that the government believes will be under consumed left to the free market

continued on page 163

Glossary

sustainable able to be continue/maintained

infrastructure the basic structure/systems of a country (e.g. roads/railways)

the rate of change in LRAS. If they increase at the same rate, the price level would not change. Supply-side policies introduced to increase productivity, such as subsidies paid to firms to increase the value of human capital, help to keep inflation down when AD starts to exceed aggregate supply. However, if AD is not strong enough, increases in **productive capacity** lead to **excess capacity**, causing a fall in the price level.

Model sentence: Rising real incomes leads to increasing AD and demand-pull inflation. However, inflationary pressures can be reduced by increases in long-run aggregate supply.

As households' incomes rise, people are able to consume more goods and services. They are able to satisfy more wants. The standard of living and consumer welfare increase as the economy grows. As the economy grows it is possible for firms to increase investment in the research and development of new technologies and new goods. New goods create new demands that can be satisfied, thereby increasing consumer welfare.

Increases in the productivity of labour and capital lead to a fall in **average total cost**. Firms are able to sell at lower prices and still make a profit. This makes them more internationally competitive on price, leading to an increase in the **quantity demanded** of exports thereby increasing AD and improving the **current account balance**. However, increases in income can lead to increases in the demand for imports, thereby worsening the current account balance. The extent to which demand for imports increases after an increase in income is dependent on the nation's **marginal propensity to import**.

Model sentence: Increases in investment lead to increases in productivity and lower average total costs, thereby increasing international competitiveness.

However, increases in a country's output can lead to increases in the **negative externalities** created by production, such as higher carbon emissions, and may cause **market failure**. The quantity of natural resources, many of which are non-renewable, will fall as output increases leaving fewer resources available for future generations who will have to pay a higher price for them. As economies grow and output increases, natural resources might be reduced at such a rate that is not **sustainable**.

Higher incomes lead to an increase in **tax revenues**. Government has more tax revenue to spend on **merit goods** and **public goods** as well as investments in **infrastructure**, such as roads and telecommunications networks. Increased government spending on education and training, which are merit goods, may lead to increases in productivity. Improvements in transport infrastructure, for example, lead to increases in productivity because goods and workers can move more quickly, saving time and reducing transport costs.

Higher tax revenues may reduce the **budget deficit** and the government's borrowing requirements. Over time the government may be able to reduce the **national debt**. This would reduce the **interest payments** on the debt thereby reducing the amount of tax taxpayers in the future must pay for interest payments leaving them more income to spend on goods and services. In the UK in 2013 the average household paid £1,900 in tax just to cover the interest payments on the national debt.

If more of a country's factors are used for investment it is possible that there will be fewer factors available for the production of consumer goods. This is shown in Figure 55.1 (on page 159) as a movement from point a to point b. However, in the long run, greater investment leads to an increase in the productive capacity of the country and an outward shift in the PPC as shown in Figure 55.3b (on page 161). This means that the economy in the long run may be able to produce more of both capital and consumer goods and satisfy more wants, increasing society's welfare. However, greater investment in capital can lead to higher levels of **technological unemployment** as capital is used in production instead of labour. However, the demand for labour to produce the capital and build the factories increases.

As economies grow over time they can move away from producing mainly agricultural output towards the production of manufactured goods. And as economies continue to grow, factors may be reallocated away from the production of manufactured goods and **heavy industry** towards the production of services. As economies grow they go through structural changes and this causes structural unemployment, where people are unemployed because the skills they have are not demanded by the current industries.

Test your understanding of this unit by answering the following questions

- Using diagrams, explain the distinction between short-run economic growth and long-run economic growth.
- Using diagrams, explain how investment in both human capital and physical capital can cause economic growth.
- Discuss the consequences of economic growth.

Learning Outcome

- Calculate the rate of economic growth from a set of data. (HL)

The calculation

The rate of economic growth is the rate of change in a country's **real GDP** from one period of time to another expressed as a percentage. Usually the time period is one year but growth is regularly measured over quarters (3 months).

The formula used to calculate economic growth is set out below.

$$\text{The rate of economic growth} = \frac{(\text{real GDP in time period 2} - \text{real GDP in time period 1})}{\text{real GDP in time period 1}} \times 100$$

Below is listed real GDP from 2006 to 2009 for country 'X'.

Year	Country 'X' Real GDP (US\$ millions)
2006	1 680 044
2007	1 710 488
2008	1 790 562
2009	1 728 212

Calculate the rate of economic growth for country 'X' between 2006 and 2007 – a step-by-step guide

Trouble shooter

$$\text{The rate of economic growth} = \frac{(\text{real GDP in 2007} - \text{real GDP in 2006})}{\text{real GDP in 2006}} \times 100$$

$$\text{The rate of economic growth} = \frac{(1\,710\,488 - 1\,680\,044)}{1\,680\,044} \times 100$$

$$\text{The rate of economic growth} = \frac{(30\,444)}{1\,680\,044} \times 100$$

$$\text{The rate of economic growth} = 0.01812 \times 100$$

The rate of economic growth in country 'X' between 2006 and 2007 was 1.81%.

Calculate the rate of economic growth between 2008 and 2009

$$\text{Growth rate} = \frac{(1\,728\,212 - 1\,790\,562)}{1\,790\,562} \times 100 = \frac{-62\,350}{1\,790\,562} \times 100 = -0.0348 \times 100 = -3.48\%$$

The rate of economic growth in country 'X' between 2008 and 2009 was -3.48%.

Calculate the rate of economic growth between 2006 and 2009

$$\text{Growth rate} = \frac{(1\,728\,212 - 1\,680\,044)}{1\,680\,044} \times 100 = \frac{48\,168}{1\,680\,044} \times 100 = 0.0287 = 2.87\%$$

The rate of economic growth between 2006 and 2009 was 2.87%.

The economy grew year on year between 2006 and 2008. Real GDP reached its highest point in 2008. Between 2008 and 2009 the country entered a **recession** experiencing a negative rate of growth of -3.48%. However, overall between 2006 and 2009 the country's economy grew by 2.87%.

Test your understanding of this unit by answering the following questions

- Using the data set out in the table below, calculate the rate of economic growth for country 'Y' between each of the years and between 2010 and 2013.
- Describe the changes to economic growth between 2010 and 2013.

Year	Country 'Y' Real GDP (€ millions)
2010	2 420 488
2011	2 380 835
2012	2 340 903
2013	2 390 432

Subject vocabulary

continued from page 162

public good a good that is non-excludable and non-rival. Once provided it is not possible to stop people benefitting from the consumption of it and therefore people free ride – they do not pay.

budget deficit occurs when government expenditure is greater than tax revenue

national debt the total amount of money a government has borrowed. When a government runs a budget deficit it must borrow the difference thereby adding to the national debt.

interest payments the money paid at regular intervals on loans

technological unemployment unemployment caused by technological changes. It occurs when capital replaces labour in the production of goods.

heavy industry industries that use very large and expensive machinery and plant and produce large quantities of output such as car manufacturers and oil and steel producers

real GDP the value of all output of an economy produced in a given period of time, usually a year, adjusted to take into account the effect of inflation

recession two consecutive quarters of negative economic growth

Learning Outcomes

- Explain the difference between equity in the distribution of income and equality in the distribution of income.
- Explain that due to unequal ownership of factors of production, the market system may not result in an equitable distribution of income.
- Analyze data on relative income shares of given percentages of the population, including deciles and quintiles.
- Draw a Lorenz curve and explain its significance.
- Explain how the Gini coefficient is derived and interpreted.

Subject vocabulary

factors of production the inputs into the production process (land, labour, capital and entrepreneurship)

interest the price paid for the use of borrowed money/ the money earned from bank deposits

savings income that is not spent

income tax a direct tax on individual earnings (wages, rent, profit, interest) and paid to the government

market where buyers and sellers meet to exchange money for goods and services

shareholders individuals or institutions that own at least one share in a company. They are the owners of the company and are therefore entitled to a share of the profits.

share a unit of ownership of a company's capital. The owner is entitled to a proportion of the company's profit.

asset an item of value owned by an individual or firm, especially one that could be converted to cash

supply of workers the quantity of workers who are willing and able to work at each wage in a given industry

revenue the income a firm receives from consumers in exchange for goods (revenue = price × quantity sold)

equilibrium wage the wage at which the quantity of labour supplied is equal to the quantity of labour demanded

labour market a market in which firms demand labour and workers supply labour. The interaction of demand and supply of labour determines the equilibrium wage.

Distinguish between equality and equity in the distribution of income

Income is the payment made by firms to households for the use of the **factors of production**. Income is made up of wages, rent, profit, and interest. National income is the sum of all these payments made in a country over a given period of time, usually a year. The average income per head is calculated by dividing total national income by the population. The average income in the UK in 2013 was about £24,000. There are many people who earn much more than this amount and many who earn less. People do not earn the same amount of income; therefore, income is not distributed equally. There are many reasons for this, which will be discussed later in this unit. The amount of inequality of income can be studied, measured, and published. Equity means fairness or justice. What is fair to one person may not seem fair to another. Is income distribution equitable? This is a difficult question to answer. Answers may vary depending on personal opinions and circumstances.

Inequality of income is not always inequitable or unfair. It seems fair that a worker who does the same job in the same factory as another worker but works longer hours gets a greater wage. And if a worker saves some of his income it is fair that he receives **interest** payments from his **savings**. Another worker who spends all his income on satisfying present wants has no savings and therefore receives no interest payments. Again, income distribution is unequal but it is not necessarily unfair or inequitable.

Distinguish between horizontal equity and vertical equity

Horizontal equity occurs when people who are in the same situation are treated in the same way. For example, it is fair that two workers who earn \$35,000 pay the same rate of **income tax**. If this does not happen it would be unfair. A woman applying for a job who has the same skills as the male applicant should have an equal chance of getting the job. The same is true of people of different ages, races, or religious beliefs. Any other outcome is unfair. Horizontal equity in a society means that people are not discriminated against in any situation on the basis of race, age, gender, or religion. Many countries have laws that make discrimination illegal in order to make society more equitable, although discrimination still occurs.

Vertical equity occurs when people earning different incomes are treated differently so as to make society more equitable. For example, those people that earn higher incomes pay a higher rate of tax. The government can then use the revenue to redistribute income more fairly and more equally.

Explain why the unequal ownership of factors may lead to an inequitable and unequal distribution of income

People receive different amounts of income in a **market**-based economic system because the ownership of the factors is not distributed equally. There are some people who can work, selling their labour to firms. There are some people who are not able to work and therefore cannot sell their labour in order to earn a wage. Some people own land and property, and receive rent. **Shareholders** receive a dividend payment each year which is a share of the company profits. Ownership of the resources can be built up over time. A person may inherit property and **shares**, and because these **assets** earn income that person may more easily be able to buy more property and shares, thereby increasing the amount of income earned. In time the accumulated assets can be passed on to the next generation. People who own assets earn more income and are therefore able to buy more assets that provide even more income. It can be argued that the distribution of income is becoming more unequal and inequitable. Those people on lower incomes are not given the same opportunity as others to buy assets and thereby increase their income. Often poorer people only own their labour and therefore can only earn a wage.

There is a high **supply of workers** who are unskilled or have few skills. Low skilled workers make relatively little extra **revenue** and profit for the firm. Because the wage firms are willing to pay for unskilled workers is low and the supply of unskilled workers is high, the **equilibrium wage** in this **labour market** is relatively low. There is a lower supply of skilled workers and, because they provide greater additional revenue and profit for a firm,

demand is higher. Lower supply and higher demand for such workers means that the equilibrium wage in this labour market is higher. For example, a successful marketing manager is able to increase revenue and profits of a firm by a large amount but a cleaner is not. The marketing manager will therefore be paid a higher wage than the cleaner. Those who do not have the skills demanded by industries will not be able to find a job and will not receive a wage. Those who receive state benefits, such as a state pension or unemployment benefit, earn a fixed income. Their income is determined by government and because the unemployed and pensioners have no or very little power to gain an increase in their **nominal income**, the real value of their income can fall over time because of inflation. In many countries the proportion of the population that is in retirement has been growing and therefore the distribution of income has become relatively more unequal.

The price of shares is determined by the **forces of demand and supply** in the **stock market**. The dividend paid to the owner of shares is closely linked to its price. The price of property is determined by **market forces** in the property market. Demand for property, both commercial and residential, in central London is relatively high and supply is relatively low whereas in Sunderland, in the north of England, demand is much lower and supply higher. The excess demand in the property market in London pushes prices up and the excess supply in Sunderland pushes price down. Rents paid on property are linked to its price. Therefore, the income earned on property in London is relatively high and in Sunderland it is relatively low.

Firms in **uncompetitive industries** are able to reduce supply of the good and increase price thereby forcing the consumer to pay a higher price than the price that would be paid in a **competitive market**. The firm increases its profit at the expense of the consumers. Under **imperfect competition** there is a transfer of wealth from consumers to the shareholders. Some governments try to reduce monopoly power, by reducing or removing barriers to entry into industries and by making illegal anti-competitive behaviour such as **destroyer pricing**, so that new firms can enter the market and compete.

It is clear that the distribution of income is unequal. Governments in many countries are able to make the distribution more equitable. Taxing those on relatively high incomes more means the government is able to redistribute income to those on relatively low incomes. Income distribution will be more equal and more equitable. The government can encourage firms to give **employees** an opportunity to own shares in their business and by **privatizing state monopolies** can encourage people who would not normally buy shares to do so. The Conservative government in the UK during the 1980s tried to extend property and share ownership. Many state monopolies were privatized and many people bought shares. However, most of the shares were sold to **financial institutions** soon after they were bought. Many gained a quick profit on the sale but widespread share ownership did not last. People were encouraged to buy their council house (government-owned houses that were rented to people). The price was set below market price and many people did buy the houses they rented.

Most economists and politicians argue that an unequal distribution of income is a good thing because if every person earns the same income there would be little incentive to study hard at school and to work hard to learn new skills. The **value of human capital** would fall because there would be no opportunity to earn a higher income. All industries would become less productive and therefore less competitive. Real GDP would fall and most people would have less income. Economists and politicians often disagree about the optimum or best distribution of income.

Analyze data on relative income shares of given percentages of the population

Set out below in Table 57.1 are data on the distribution of income in four countries in 2010. The households are divided into **quintiles** ranging from the poorest to the richest. The percentage of the total national income they receive is calculated and listed under each of the quintiles. The distribution of income in the UK and Russia are similar. In the UK the poorest 20% of the population earns 6.14% of the total income and in Russia the poorest 20% earns 6.46% of the country's income. The UK's 2nd, 3rd, and 4th quintiles earn a little over 1% more of total income than in Russia. The poorest 20% in Argentina earn 4.48% of total income. This is less than in the UK and Russia. A much higher proportion of people in South Africa are poor. The poorest 20% earn less than 3% of the nation's total income and the poorest 40% earn less than 8% of total income. Argentina's richest 20% earn 49.36% of total income, just over 2% more than in Russia and just over 5% more than in the UK.

Country	Poorest 20%	2nd 20%	3rd 20%	4th 20%	Richest 20%
United Kingdom	6.14	11.41	15.96	22.47	44.02
Russia	6.46	10.35	14.77	21.29	47.13
Argentina	4.38	9.31	14.78	22.17	49.36
South Africa	2.7	4.63	8.16	16.3	68.21

Table 57.1 Source: *Index Mundi*

Subject vocabulary

nominal income the numerical value of income which has not been adjusted to take into account the effect inflation has on the purchasing power of income

forces of demand and supply changes in the determinants of demand and supply in a market that affect the market price and the allocation of resources

stock market a market in which the shares of companies are issued and traded

market forces the forces of demand and supply that interact in a competitive market and determine equilibrium price

uncompetitive industries an industry that is unable to compete in the global market usually because its average costs are too high

competitive market a market in which a large number of firms compete to satisfy the wants of a large number of buyers

imperfect competition any market in which producers or consumers have some control over price

destroyer pricing when a firm sets prices very low, in order to drive its competitors out of the industry

employee a person who works for a firm in exchange for a wage

privatizing state monopolies the transfer of ownership of state-owned industries or firms from the state to individuals and private financial institutions often achieved through the government selling shares in the industry on the stock market

financial institution a business, such as a bank, that provides a service allowing firms and households to make deposits and take out loans and to make investments

value of human capital a measure of the quantity and quality of the skills of the labour force that can be employed to produce goods and services. An increase in the value of human capital leads to an increase in labour productivity.

quintiles one of the values of a variable that divides the distribution of the variable into five groups having equal frequencies

Subject vocabulary

decile one of the values of a variable that divides the distribution of the variable into ten groups having equal frequencies

Lorenz curve a graph on which the cumulative percentage of the population of a region is plotted against the cumulative percentage of its total income. The 45 degree diagonal straight line shows a perfectly equal distribution of income. The Lorenz curve bows beneath the diagonal line indicating an unequal distribution of income.

In South Africa, however, the richest 20% of the population earn almost 70% of the nation's income. The percentage of total income earned by the first four quintiles is much lower than in the other three countries. Income is distributed most equally in the UK and least equally in South Africa.

Table 57.2 sets out the poorest 20% and the richest 20% in the UK and South Africa once the data have been divided into **deciles**. The table shows clearly the differences in the distribution of income between the two countries. The second poorest 10% of households in the UK earn 4.08% of total national income whereas in South Africa the second poorest 10% earn only 1.53%. The richest 10% of households in the UK earn 28.49% of income; in South Africa the richest 10% earn a much greater 51.69% of income.

Country	Poorest 10%	2nd 10%	9th 10%	Richest 10%
United Kingdom	2.06	4.08	15.53	28.49
South Africa	1.17	1.53	16.52	51.69

Table 57.2

Explain the significance of a Lorenz curve

Economists use a **Lorenz curve** to measure inequalities in the distribution of income. In Figure 57.1 the cumulative percentage of the population of a country is plotted on the horizontal axis and is set out in order of income earned. The cumulative percentage of its income is plotted on the vertical axis. The 45 degree line is called the 'line of equality'. The 45 degree line shows each person earning the same percentage of income. The first 20% of the population earns 20% of the income, the next 20% of the population also earn 20% of the income and the top 20% of the population earn 20% of the income. Each person earns the same amount of income. Income is distributed perfectly equally.

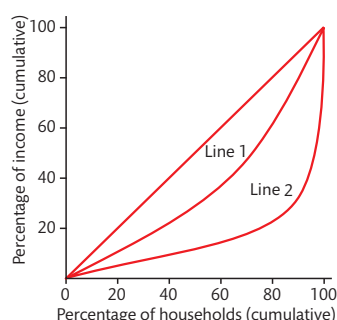


Figure 57.1

The Lorenz curves are the bowed or curved lines, line 1 and line 2. Line 1 shows the distribution of income in one country; line 2 shows the distribution of income in another country. Both lines are bowed and therefore show an unequal distribution of income. Line 1 shows the poorest 20% of the population earn 10% of the income and the richest 20% earn 40% of income. Line 2 shows the poorest 20% earn 2% of income and the richest 20% earn 70% of income. The distribution of income is more unequal in the country represented by line 2, than in the country represented by line 1. The further away the Lorenz curve is from the 45 degree line of equality, the more unequal is the distribution of income.

Explain how the Gini coefficient is derived and what it means

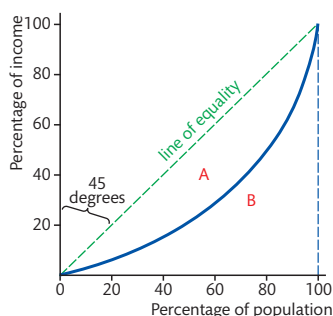


Figure 57.2

Inequality in the distribution of income can be measured by the Gini coefficient. It is the ratio of the area above the Lorenz curve and below the 45 degree line (area A) to the area of the triangle that is below the 45 degree line (area A + B). The value of the Gini coefficient is between 0 and 1. As the Lorenz curve moves further away from the 45 degree line the proportion of area A to the total area below the 45 degree line gets bigger. The value of A/A+B gets bigger when A gets bigger. Therefore, the higher the value of the Gini coefficient the more unequal the distribution of income.

If income is distributed perfectly equally the coefficient is equal to 0. And if income is distributed perfectly unequally, so that one person earns 100% of the income and all the others earn 0% of the income, the Gini coefficient is equal to 1.

The Gini coefficient can be written as an index out of 100. Gini coefficient = 0.4 is the same as Gini index = 40.

The Scandinavian countries have relatively low Gini indexes: Denmark's Gini index = 24 and Sweden's = 25. The governments of these countries redistribute income from the relatively high income earners to the relatively low

Subject vocabulary

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private costs the cost incurred by firms or consumers from their own production or consumption of a good

external costs occurs when the production or consumption of a good creates a cost that must be paid by third parties

income earners through taxation and government spending. In such countries the rate of tax is relatively high. In Southern African countries the Gini indexes are relatively high. For example, Botswana has an index of 61 and Namibia's Gini index is 63.9. In these countries the ruling **elite** often receive most of the income and the rest of the population live in relative poverty. Income inequality is very high. As can be seen in Table 57.1 (on page 165), in the UK the distribution of income is relatively more equal than in South Africa. The UK's Gini index is 34 while South Africa's is 63.1.

Test your understanding of this unit by answering the following questions

- Explain why the distribution of the ownership of factors of production affects the distribution of income.
- The Gini index of country X is 24 and the Gini index of country Y is 65. Using a diagram, explain the significance of these statistics.

Glossary

elite a group of people with a high level of power/influence because they have money/knowledge/skills

Subject vocabulary

absolute poverty occurs when people do not have enough resources to satisfy their basic needs

Learning Outcomes

- Distinguish between absolute poverty and relative poverty.
- Explain possible causes of poverty, including low incomes, unemployment, and lack of human capital.
- Explain possible consequences of poverty, including low living standards, and lack of access to healthcare and education.
- Distinguish between direct and indirect taxes, providing examples of each, and explain that direct taxes may be used as a mechanism to redistribute income.
- Distinguish between progressive, regressive, and proportional taxation, providing examples of each.
- Calculate the marginal rate of tax and the average rate of tax from a set of data. (HL)

Explain the difference between absolute poverty and relative poverty

Absolute poverty occurs when people are not able to satisfy their basic needs. People who are homeless, who are unable to keep warm or who are underfed live in absolute poverty. Absolute poverty exists in all countries but there are more people living in absolute poverty in the less developed economies than in countries with relatively higher **GDP**. Given the size of national income in relatively wealthy countries, in theory the government could eliminate absolute poverty completely through the redistribution of income.

Relative poverty occurs when the standard of living of a person in society is low compared to the standard of living of others in society. When a person's income is less than a specified proportion of the average income, then that person is living in relative poverty.

Explain the causes of poverty

People who do not own any physical assets or financial assets and who are unskilled, who lack **human capital** are more likely to be poor. Those who do not own assets that provide income, such as savings accounts, shares, or property and whose labour is not demanded by firms cannot earn an income. Lack of human capital is caused by low educational achievement, such as the inability to read and write, and a lack of skills. Workers with these characteristics find it difficult to sell their labour to firms in the **labour market**. Supply of unskilled workers is high, which pushes down the wage. People who are well educated and have skills demanded by firms receive higher wages. In many countries there is an **excess supply** of unskilled workers so wages are low and many workers are unemployed. The amount of unemployment benefits varies from country to country, but in most cases those who are unemployed are relatively poorer than those who have jobs and are more likely to live in absolute poverty.

Explain the consequences of poverty

There are **private costs** and **external costs** created by poverty. People on very low incomes are much more likely to live in poor housing, have unhealthy diets, and are less likely to have access to high quality health services. Therefore, those living in poverty are more likely to suffer from poor physical and mental health, and die at a younger age.

Subject vocabulary

GDP gross domestic product is the monetary value of all the finished goods and services produced within a country in a given period of time, usually measured over a year

relative poverty a measure of poverty that relates to the average income earned in a country or region. Definitions vary but many governments define it as an income less than 50% of the median income.

human capital the store of knowledge and the set of skills that a worker possesses which can be used in the production process. The higher the value of human capital the more productive the worker is. Human capital can be improved through investment in education and training.

labour market a market in which firms demand labour and workers supply labour. The interaction of demand and supply of labour determines the equilibrium wage.

excess supply occurs when quantity supplied is greater than quantity demanded

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Glossary

social unrest people/society protesting/behaving violently in response to a political situation

Subject vocabulary

dividend payments payments made by companies to shareholders from the after-tax profits

interest the price paid for the use of borrowed money/ the money earned from bank deposits

expenditure the price paid by buyers in exchange for goods and services. Total expenditure = price \times quantity purchased.

Some economists and sociologists say there is a link between poverty and crime. Some people who are unable to earn a sufficient income engage in criminal activities such as theft. High levels of unemployment and poverty can lead to **social unrest**, such as rioting and violent protest.

The external costs of poverty are high. Resources have to be used to police social unrest and crime. Bad diets and unhealthy living conditions lead to greater demands on health service providers. And those who are poor, unskilled, or uneducated are a wasted resource because they do not make a positive contribution to GDP. Many governments are aware of the private and external costs, and want to reduce these costs. A more equal distribution of income is therefore an objective of some governments.

Distinguish between direct tax and indirect tax

A tax is a direct tax when the tax paid goes directly from those who owe the tax to the government. Income tax is a direct tax because the amount of tax charged on the wage earned is paid directly to the government. Usually this is done by the employer on behalf of the worker. Corporation tax is a tax on company profits which is paid directly from the company to the government. **Dividend payments** and the **interest** paid on savings are taxed, and the tax is paid straight to the government by the income earner. Legally, these taxes are unavoidable because income earners must tell the government how much income they have earned.

Indirect tax does not go directly to the government. Indirect taxes are taxes on **expenditure**. Examples include 'value added tax' (VAT) in the UK and 'goods and services tax' (GST) in Australia. When the consumer buys a good or service, the tax charged on the sale is included in the price paid by the consumer. The seller of the good collects the tax and then sends the tax to the government. Households are able to avoid paying indirect tax by not buying the goods; however, basic necessities such as fuel and clothes are taxed so it is impossible to avoid paying taxes completely.

Distinguish between progressive, regressive, and proportional taxation

A progressive tax is a tax where the proportion or percentage of income that is taxed (the rate of tax) increases as income increases. For example, the Federal tax brackets in 2013 on taxable income for a single person in the US were as follows:

Income \$	Tax bracket %
0–8 925	10
8 925–36 250	15
36 250–87 850	25
87 850–183 250	28
183 250–398 350	33
398 350–400 000	35
400 000 and above	39.6

Table 58.1

It can be seen in the data above that the rate at which income is taxed increases as income rises. For example a single person earning \$40 000 pays 10% tax on \$8 925, 15% on income earned between \$8 925 and \$36 250, and 25% on income between \$36 250 and \$87 850.

Model sentence: The marginal rate of tax is the rate of tax paid on the next unit of currency earned. In the case of a progressive income tax, the marginal rate of tax increases as income rises from one tax bracket to the next.

A regressive tax is a tax for which the proportion or percentage of income that is taxed decreases as income increases and increases as income falls. This type of tax does not take into account the amount of income a person earns. It does not take into account the 'ability to pay'. Indirect taxes are regressive taxes. Take two people: one earns \$20 000 and the other earns \$40 000. Each buys a car and each pays a sales tax of \$1 000. The amount paid in tax is the same, but the percentage of tax paid is different: \$1 000 is 2.5% of \$40 000 ($(1\,000/40\,000) \times 100 = 2.5\%$), whereas \$1 000 is 5% of \$20 000 ($(1\,000/20\,000) \times 100$). The tax is regressive because the percentage rate of tax is higher for the person on a lower income. As incomes fall, the rate of tax increases.

A proportional tax is a tax for which the proportion or percentage of tax that is paid does not change as income changes. For example a person earning an income of \$20 000 pays the same rate of tax as a person earning \$40 000. A 10% rate of tax on \$20 000 = \$2 000 tax paid. On \$40 000 \$4 000 is paid in tax. Although the rate of tax is the same, the higher the income, the higher the actual amount of tax paid. Some countries are moving towards a proportional or flat tax rate system. (An evaluation of this system appears on pages 171–73.)

Model sentence: For progressive taxes, the percentage of income paid in tax increases as income increases; for regressive tax, the percentage of income paid in tax falls as income increases; and for proportional tax, the percentage of income paid in tax stays the same as income increases.

Explain how direct taxes may be used to redistribute income

The tax system used by a government plays an important role in how income is distributed. A government can introduce a more progressive tax system in order to redistribute income away from richer people to poorer people. Taxes raised by government can be used to increase **transfer payments** from those on higher income to those on lower income. For example the **tax revenue** can be used to fund increases in unemployment benefit. The Scandinavian countries have the lowest Gini indexes, showing that income is distributed more equally in these countries than anywhere else in the world. These countries also have the highest marginal rates of tax in the world. Those countries with high Gini indexes tend to have low **marginal rates of tax**. Some politicians and economists argue that more tax revenue should be raised from progressive taxes on income and less from regressive taxes on expenditure because it is more equitable.

Model sentence: Progressive taxation takes into account the ability to pay the tax. A move away from a regressive tax system to a more progressive one is likely to lead to a more equal distribution of income.

(Government policy introduced in order to redistribute income is evaluated on pages 171–73.)

Calculate the marginal rate of tax and the average rate of tax from a set of data (HL)

The average rate of tax (ART) is the tax paid divided by gross income multiplied by 100. Gross income is income earned before deductions, such as income tax, are made. Net income is the actual amount received by the worker after all deductions have been made.

$$\text{ART} = (\text{tax paid} / \text{gross income}) \times 100$$

The marginal rate of tax (MRT) is the change in tax divided by the change in gross income multiplied by 100.

$$\text{MRT} = (\text{change in tax} / \text{change in gross income}) \times 100$$

Table 58.2 shows the marginal rates of tax on income earned in country X.

Gross income \$	MRT %
10 000	10
10 001–20 000	20
20 001–30 000	30
30 001–50 000	40
50 000 and above	50

Table 58.2

Subject vocabulary

transfer payments a payment of money for which nothing is received in exchange

tax revenue the income the government receives through the levying and collection of taxes

marginal rates of tax is the rate of tax paid on the next unit of income earned

Subject vocabulary

continued from page 171

quasi-public goods goods that share some of the characteristics of public goods but are not fully non-excludable and non-rival. A road is an example. Most roads are free at the point of use but it is possible to make people pay through tolls and when traffic is heavy the amount available to others to use does begin to diminish so there can be rivalry in consumption.

private sector the part of the economy that is regulated but not controlled by the state and concerns individuals and groups bringing together the factors of production normally with the aim of making a profit

value of human capital a measure of the quantity and quality of the skills of the labour force that can be employed to produce goods and services. An increase in the value of human capital leads to an increase in labour productivity.

productivity the quantity of output per unit of input

cycle of poverty occurs in a country which has low income and therefore low levels of savings. Low levels of savings means little investment can take place and the economy is unable to grow, thus income remains low.

redundancy payment a sum of money paid by the employer to a former employee who has been made redundant (laid off work)

sick pay a sum of money paid by an employer to an employee who is not working due to illness

relative poverty a measure of poverty that relates to the average income earned in a country or region. Definitions vary but many governments define it as an income less than 50% of the median income.

real-wage unemployment occurs when the real wage is above the equilibrium wage thereby causing an excess supply of labour

classical/real-wage unemployment when wages are above the market clearing level leading to an excess supply of labour

excess supply occurs when quantity supplied is greater than quantity demanded

Using the data in Table 58.2, calculate the ART for a worker earning \$25 000 and a worker earning \$70 000 per year – a step-by-step guide (HL)

Trouble shooter

Worker earning \$25 000 per year:

$$\$10\,000 \text{ taxed at } 10\% = \$10\,000 \times 10\% = \$1\,000$$

$$\$10\,000 \text{ taxed at } 20\% = \$10\,000 \times 20\% = \$2\,000$$

$$\begin{array}{rcl} \$5\,000 \text{ taxed at } 30\% & = & \$5\,000 \times 30\% = \$1\,500 \\ & & = \$25\,000 \quad = \$4\,500 \end{array}$$

$$\text{ART} = (\text{tax paid} / \text{total gross income}) \times 100 = (\$4\,500 / \$25\,000) \times 100 = 18\%$$

Worker earning \$70 000 per year:

$$\$10\,000 \text{ taxed at } 10\% = \$10\,000 \times 10\% = \$1\,000$$

$$\$10\,000 \text{ taxed at } 20\% = \$10\,000 \times 20\% = \$2\,000$$

$$\$10\,000 \text{ taxed at } 30\% = \$10\,000 \times 30\% = \$3\,000$$

$$\$20\,000 \text{ taxed at } 40\% = \$20\,000 \times 40\% = \$8\,000$$

$$\begin{array}{rcl} \$20\,000 \text{ taxed at } 50\% & = & \$20\,000 \times 50\% = \$10\,000 \\ & & = \$70\,000 \quad = \$24\,000 \end{array}$$

$$\text{ART} = (\text{tax paid} / \text{total gross income}) \times 100 = (\$24\,000 / \$70\,000) \times 100 = 34.29\%$$

Using the data in Table 58.1, calculate the MRT for a worker who receives a pay increase from \$30 000 to \$45 000 (HL)

At \$30 000 the worker was paying in tax:

$$(\$10\,000 \times 10\%) = \$1\,000$$

$$(\$10\,000 \times 20\%) = \$2\,000$$

$$(\$10\,000 \times 30\%) = \frac{\$3\,000}{\$6\,000} +$$

At \$45 000 the worker is now paying:

$$(\$10\,000 \times 10\%) = \$1\,000$$

$$(\$10\,000 \times 20\%) = \$2\,000$$

$$(\$10\,000 \times 30\%) = \$3\,000$$

$$(\$15\,000 \times 40\%) = \frac{\$6\,000}{\$12\,000} +$$

Tax paid increases from \$6 000 to \$12 000 as income increases from \$30 000 to \$45 000.

$$\text{MRT} = (\text{change in tax} / \text{change in gross income}) \times 100 = (\$6\,000 / \$15\,000) \times 100 = 40\%$$

Test your understanding of this unit by answering the following questions

- Distinguish between progressive, regressive, and proportional taxation.
- Explain possible causes of poverty.
- Explain possible consequences of poverty. Distinguish between the private costs and external costs.
- Using the data set out in the table below, calculate the average rate of tax for a worker earning £25 000 and the marginal rate of tax for a worker who receives a pay increase from £28 000 to £64 000.

Gross income \$	MRT %
0–10 000	0
10 001–15 000	10
15 001–20 000	15
20 001–30 000	20
30 001–50 000	30
60 001 and above	50

Learning Outcomes

- Explain that governments undertake expenditures to provide directly, or to subsidize, a variety of socially desirable goods and services (including healthcare services, education, and infrastructure that includes **sanitation** and clean water supplies), thereby making them available to those on low incomes.
- Explain the term transfer payments, and provide examples, including old-age pensions, unemployment benefits, and **child allowances**.
- Evaluate government policies to promote equity (taxation, government expenditure, and transfer payments) in terms of their potential positive or negative effects on efficiency in the allocation of resources.

The government collects taxes and uses the tax revenue to provide many goods and services, particularly **merit goods** that are underprovided and under consumed if left to the **free market**, and **public goods** that would not be supplied at all. Governments provide such goods in order to correct **market failure**. The government in many countries provides education services and health services so that society benefits from the **positive externalities** and **private benefits** of consumption of them. Infrastructure, often **quasi-public goods**, such as water and **sewage** services, transport infrastructure, and social housing are provided by the government. The government either provides these goods or services directly or the government pays subsidies to firms in the **private sector** to provide them. (See pages 36–38 for a detailed explanation of how a subsidy increases supply and consumption of merit goods.) Governments provide these goods and services because if they were left to the free market people on low incomes would not have enough money to buy them.

For example, in countries where education is not provided by the government, many children do not go to school because their parents cannot afford to buy educational services in the private market. Governments in countries with low GDP often do not have enough tax revenue to pay for these goods and services. Therefore, it is very difficult to raise the **value of human capital** and improve the quality of life of the citizens. When the state provides education for all young people each person is given the same opportunity. Young people in low income families are not discriminated against thereby making society more equitable. An education gives them a greater opportunity to earn a higher income in the future, thereby possibly making the distribution of income more equal.

Model sentence: A country where the human capital is poor and where the infrastructure is basic will have very low **productivity** and will not be able to escape the **cycle of poverty**.

What are transfer payments?

A transfer payment is a payment made by the government to a person for which no good or service is provided. They are payments made in order to increase the income of certain people in the economy. Transfer payments are used to redistribute income from those on relatively high incomes to those on relatively low incomes. Examples include unemployment benefit and state pensions. Governments also subsidize university tuition fees, the cost of heating a home, and rents.

Comment on government policies to promote equity and to distribute income more equally

Governments introduce laws to promote equity. Discrimination based on age, sex, race, and religion is illegal in many countries. This is to ensure that in society all people are treated equally and have equal opportunities. Employers are made to provide more than just a wage. Workers who lose their jobs are given a **redundancy payment**; if workers are ill, firms provide **sick pay**. All firms must pay a minimum wage set by the government. A higher minimum wage may lift people out of absolute poverty and reduce **relative poverty**. A higher wage acts as an incentive for people to supply their labour. People are more likely to come off state benefits and find a job if the wage is greater than benefits. However, a high minimum wage can cause **real-wage unemployment** or **classical unemployment**. As wages rise, firms demand less labour but supply of labour increases, leading to an **excess supply** of labour and an increase in unemployment. If the cost to the firm of employing workers increases, *ceteris paribus*, fewer workers will be employed by the firm, leading to an increase in unemployment and perhaps an increase in income inequality.

Transfer payments affect behaviour. High welfare benefits introduced to reduce poverty and to make society more equitable discourage workers from seeking a job, thereby reducing economic activity and GDP.

Glossary

sanitation the removal/treatment of waste/water

child allowance money given by the government to families with children

sewage a mixture of human waste and used water

Subject vocabulary

merit good a good/service that the government believes will be under consumed left to the free market. Consumption of a merit good may generate positive externalities therefore the social benefit of consumption is greater than the private benefit.

free market a market where the forces of demand and supply are allowed to operate without any forms of intervention

public good a good that is non-excludable and non-rival. Once provided it is not possible to stop people benefitting from the consumption of it and therefore people free ride - they do not pay. The good will not be supplied left to the free market because no firm would be able to make a profit. Also, consumption of the good by one person does not diminish the amount available for others to consume.

market failure when resources are not allocated or used efficiently

positive externalities occur when the production or consumption of a good causes benefits to third parties. The existence of positive externalities means that social benefit is greater than private benefit.

private benefit the benefit firms or consumers receive from their own production or consumption of a good

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Subject vocabulary

overtime time spent working in addition to normal working hours

marginal rates of tax the rate of tax paid on the next unit of income earned

corporation tax a tax-levied in the UK on company profits

retained profit after-tax profit that is not paid out to shareholders but is kept by the firm to be reinvested in the business or used to pay back debt

technologically advanced capital capital that incorporates new technology and is used in place of existing capital to produce goods and services thereby increasing productivity

average total cost is equal to total cost divided by quantity of output

exporting industries industries that produce output in one country and sell at least some of the output to buyers in other countries

economic growth an increase in real GDP

real output the quantity of goods and services produced in a given time period

foreign direct investment cross-border investment, usually by firms, that involves the acquisition of assets in a foreign country. FDI can be the purchase of a minimum of 10% of the shares of a foreign company but also includes the creation of productive capacity.

utility a term that refers to the benefit or satisfaction a person receives from the consumption of goods

market forces the forces of demand and supply that interact in a competitive market and determine equilibrium price

misallocation of resources occurs when the allocation of resources leads to welfare loss and therefore a reallocation of resources could increase society's welfare

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Increasing tax rates discourages workers from working longer hours because after-tax income falls. Workers are less likely to work **overtime** or come off benefits to start work. High **marginal rates of tax** discourage workers from developing new skills and seeking promotion. And some people may decide to work in another country where tax rates are lower. Overall this has a negative effect on GDP.

If the government increases the tax rate on profit it may lead to less economic activity. Entrepreneurs take a risk by investing resources into starting up businesses. They may lose a lot of money if the business is not successful and has to close. They are willing to take the risk because there is a chance a profit can be made. The greater the possible profit, the more likely they are to start a business and take that risk. As tax rates increase, the profit that is kept by the entrepreneur falls and therefore the incentive to take the risk and start a business falls. Fewer small businesses will be started. Small businesses can grow and make important contributions to employment and GDP.

Model sentence: Higher tax rates discourage entrepreneurial risk-taking and thereby negatively affect future levels of GDP.

Existing companies will be affected by increases in **corporation tax**. A higher tax rate reduces **retained profit** and therefore reduces the amount of profit available for investment. The lack of investment in more **technologically advanced capital** would mean that productivity does not increase. **Average total cost** would remain higher, possibly leading to higher prices and a fall in international competitiveness and a loss of jobs in **exporting industries**. Investment is essential for **economic growth**. Lower taxes lead to greater investment and an increase in **real output**. In the long run, all people will receive more income. *Ceteris paribus*, as tax increases fewer foreign firms will invest in a country, leading to a fall in the amount of inward investment, thereby reducing GDP.

Model sentence: High corporation tax discourages foreign direct investment and acts as an incentive for domestic firms to move abroad, thereby negatively affecting GDP.

Some economists say that redistributing income can increase society's benefit or **utility**. The benefit or utility gained from the consumption of a good diminishes as more of the good is consumed. This is the law of diminishing marginal utility. People on low incomes consume fewer goods than people on higher incomes. If \$20 is taken from a rich person and given to a poor person then the utility the poor person gains from the consumption of a good bought with the \$20 is greater than the utility the rich person would gain because the rich person will consume more anyway, and therefore the marginal utility is lower. Therefore, by redistributing income the sum of utility of the rich person and the poor person is increased. A poor person may not be able to satisfy his needs. If a relatively high income earner spent \$100 on his tenth pair of jeans he gains utility from its consumption. However, if the \$100 was given to a poor person to feed his hungry family, the utility gained would be greater than the utility the rich person gained from the consumption of the jeans. The \$100 spent by the poor person gained more utility than if spent by the rich person. Therefore, redistributing the \$100 increases society's total utility.

Model sentence: According to the law of diminishing marginal utility, total utility can be increased by redistributing income away from rich people to poor people.

However, it is impossible to compare the utility gained from the consumption of a good between individuals so it can be argued that redistributing income might not lead to an increase in society's total utility.

Governments intervene in markets in order to redistribute income because they believe that resources are not allocated in way that is fair by **market forces**. Government expenditure is used to correct a **misallocation of resources** when the existence of **positive externalities** leads to **market failure**. In these cases government intervention can lead to a greater **allocative efficiency**. Redistribution of income can lift people out of poverty and provide opportunities for people to make a positive contribution to economic growth. Also redistribution of income can increase society's overall utility. However, government intervention can lead to **allocative inefficiency**. A redistributive tax system affects the behaviour of **economic agents**. Higher transfer payments and higher taxes discourage people from working, and reduce the amount of investment and entrepreneurial activity. In the long run, economic activity falls, leading to higher levels of unemployment, lower **real incomes**, and an increase in poverty.

Model sentence: It is difficult for the government to create a tax system that promotes equity and, at the same time, provides the right set of incentives that will lead to higher economic growth.

The poor have a relatively high **marginal propensity to consume** and a relatively low **marginal propensity to save**. This means they spend a relatively high proportion of extra income received and save a relatively

low proportion of extra income. Redistributing income away from relatively high income earners to those on relatively low incomes therefore leads to a greater level of consumption and a lower level of saving in the economy. Redistribution of income therefore can lead to higher levels of **aggregate demand**.

Explain why increasing the tax rate in order to redistribute income may lead to a fall in tax revenue

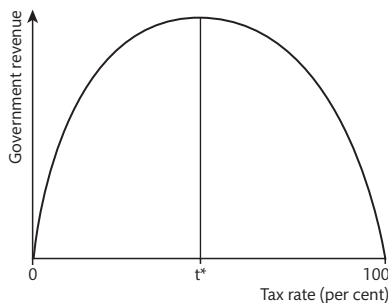


Figure 59.1

As the tax rates increase from 0%, the government begins to collect tax revenue. However, when tax rates have increased to a certain level tax revenue begins to fall. In the diagram tax revenue is maximized at t^* . An increase in the tax rate beyond t^* leads to a fall in tax revenue. This occurs because high tax rates act as a disincentive to work and act as a disincentive to declare taxable income. For example, workers will do work for 'cash in hand' rather than telling the government about their earnings. If tax on profits is high, fewer entrepreneurs will start up businesses because the incentive to do so falls as tax rates increase. High tax rates reduce **entrepreneurial** activity and risk taking, thereby reducing **investment**. High tax rates can have a negative effect on **productivity** and potential output of an economy and may lead to a slower rate of economic growth. Therefore, it can be argued that increasing tax rates may lead to a fall in tax revenue and reducing tax rates may lead to an increase in tax revenue.

Test your understanding of this unit by answering the following questions

- Comment on the possible consequences of a tax system put in place in order to reduce income inequality and to promote equity.
- Using a diagram, explain why reducing the tax rate may increase tax revenue.

Subject vocabulary

continued from page 172

positive externalities

occur when the production or consumption of a good causes benefits to third parties. The existence of positive externalities means that social benefit is greater than private benefit.

market failure when resources are not allocated or used efficiently

allocative efficiency the best or optimal allocation of resources from society's point of view. It occurs when the market is in equilibrium and social surplus is maximized (where $P = MC$).

allocative inefficiency occurs when a market is in disequilibrium, where price does not equal marginal cost leading to a suboptimal allocation of resources from society's point of view

economic agents individuals and organizations whose actions have an impact on the economy, such as households, firms, and the government

real income income after taking into account the effects of inflation on purchasing power

marginal propensity to consume is the proportion of additional income that an individual spends on goods and services. $MPC = \frac{\text{the change in consumption}}{\text{the change in income}}$

marginal propensity to save the proportion of additional income that an individual saves. $MPS = \frac{\text{the change in savings}}{\text{the change in income}}$

aggregate demand the total demand for goods and services in the economy at a given price level in a given period of time

entrepreneur an individual who, in pursuit of profit, brings together the other factors of production in order to produce a good or service

investment the addition to capital stock

productivity the quantity of output per unit of input